Panasonic

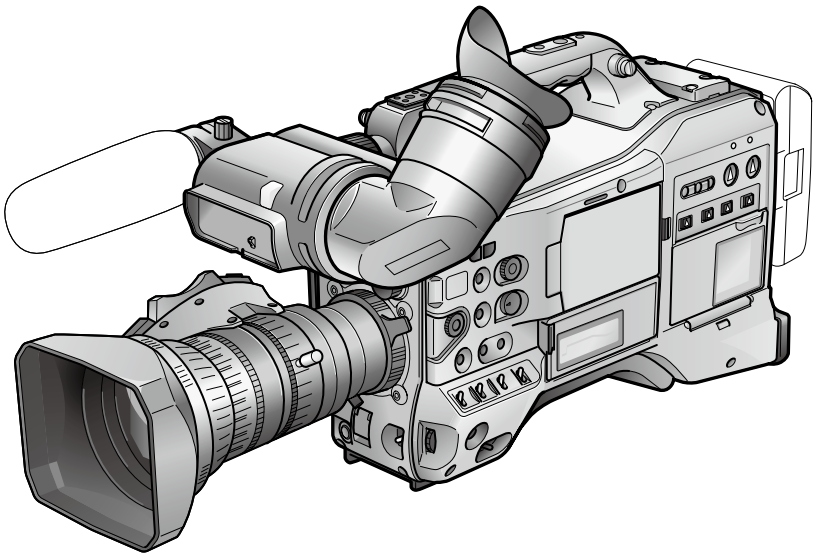
■This product is eligible for the P2HD 5 Year Warranty Repair Program. For details, see page 169.

Operating Instructions

Memory Card Camera-Recorder

P2HD

Model No. AG-HPX301E



SD SDHC

AVC-INTRA DVCPRO HD DVCPRO 50 DVCPRO DV

Before operating this product, please read the instructions carefully and save this manual for future use.

ENGLISH

S0109T3099 -P

VQT2C26-3 (E)

Read this first!

indicates safety information.

■ **DO NOT REMOVE PANEL COVERS BY UNSCREWING THEM.**
To reduce the risk of electric shock, do not remove cover. No user serviceable parts inside. Refer servicing to qualified service personnel.

WARNING:
- TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.
- TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD, KEEP THIS EQUIPMENT AWAY FROM ALL LIQUIDS. USE AND STORE ONLY IN LOCATIONS WHICH ARE NOT EXPOSED TO THE RISK OF DRIPPING OR SPLASHING LIQUIDS, AND DO NOT PLACE ANY LIQUID CONTAINERS ON TOP OF THE EQUIPMENT.

WARNING:
Always keep memory cards (optional accessory) or accessories (FRONT AUDIO LEVEL knob, knob screw, BNC cap, XLR connector cap, rear lens cap, zoom lever, connector cap) out of the reach of babies and small children.

CAUTION:
TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD AND ANNOYING INTERFERENCE, USE THE RECOMMENDED ACCESSORIES ONLY.

CAUTION:
In order to maintain adequate ventilation, do not install or place this unit in a bookcase, built-in cabinet or any other confined space. To prevent risk of electric shock or fire hazard due to overheating, ensure that curtains and any other materials do not obstruct the ventilation.

CAUTION:
Do not lift the unit by its handle while the tripod is attached. When the tripod is attached, its weight will also affect the unit's handle, possibly causing the handle to break and hurting the user. To carry the unit while the tripod is attached, take hold of the tripod.

CAUTION:
Do not jar, swing, or shake the unit by its handle while the conversion lens or another accessory is attached.
Due to the added weight of the conversion lens, any strong jolt to the handle may damage the unit or result in personal injury.

CAUTION:
EXCESSIVE SOUND PRESSURE FROM EARPHONES AND HEADPHONES CAN CAUSE HEARING LOSS.

CAUTION:
Do not leave the unit in direct contact with the skin for long periods of time when in use.
Low temperature burn injuries may be suffered if the high temperature parts of this unit are in direct contact with the skin for long periods of time.
When using the equipment for long periods of time, make use of the tripod.

IMPORTANT
"Unauthorized recording of copyrighted television programs, video tapes and other materials may infringe the right of copyright owners and be contrary to copyright laws."

EEE Yönetmeliğine Uygundur.
EEE Complies with Directive of Turkey.

EMC NOTICE FOR THE PURCHASER/USER OF THE APPARATUS

1. Applicable standards and operating environment

The apparatus is compliant with:

- standards EN55103-1 and EN55103-2 1996.11, and
- electromagnetic environments E1, E2, E3 and E4.

2. Pre-requisite conditions to achieving compliance with the above standards

<1> Peripheral equipment to be connected to the apparatus and special connecting cables

- The purchaser/user is urged to use only equipment which has been recommended by us as peripheral equipment to be connected to the apparatus.
- The purchaser/user is urged to use only the connecting cables described below.

<2> For the connecting cables, use shielded cables which suit the intended purpose of the apparatus.

- Video signal connecting cables
  Use double shielded coaxial cables, which are designed for 75-ohm type high-frequency applications, for SDI (Serial Digital Interface).
  Coaxial cables, which are designed for 75-ohm type high-frequency applications, are recommended for analog video signals.
- Audio signal connecting cables
  If your apparatus supports AES/EBU serial digital audio signals, use cables designed for AES/EBU.
  Use shielded cables, which provide quality performance for high-frequency transmission applications, for analog audio signals.
- Other connecting cables (IEEE1394, USB)
  Use shielded cables, which provide quality performance for high-frequency applications, as connecting cables.
- When connecting to the DVI signal terminal, use a cable with a ferrite core.
- If your apparatus is supplied with ferrite core(s), they must be attached on cable(s) following instructions in this manual.

3. Performance level

The performance level of the apparatus is equivalent to or better than the performance level required by these standards.

However, the apparatus may be adversely affected by interference if it is being used in an EMC environment, such as an area where strong electromagnetic fields are generated (by the presence of signal transmission towers, cellular phones, etc.). In order to minimize the adverse effects of the interference on the apparatus in cases like this, it is recommended that the following steps be taken with the apparatus being affected and with its operating environment:

1. Place the apparatus at a distance from the source of the interference.
2. Change the direction of the apparatus.
3. Change the connection method used for the apparatus.



TO REMOVE BATTERY

Main Power Battery (Ni-Cd / Ni-MH / Li-ion Battery)

● To detach the battery, please proceed in the reverse order of the installation method described in this manual.
● If a battery made by any other manufacturer is to be used, check the Operating Instructions accompanying the battery.

Back-up Battery (Lithium Battery)

● For the removal of the battery for disposal at the end of its service life, please consult your dealer.

Precautions for Use

Caution regarding laser beams

The MOS sensor may be damaged if it is exposed to laser light.
When using the camera-recorder in locations where laser irradiation equipment is used, be careful not to allow the laser beam to shine directly on the lens.

PLEASE NOTE:

- When preparing to record important events, always shoot some advance test footage, to verify that both pictures and sound are being recorded normally.
- Should video or audio recording fail due to a malfunction of this camera-recorder or the P2 cards used, we will not assume liability for such failure.

Disposing and transferring ownership of memory card devices

Formatting or deleting a memory card device in this camera or a PC will only change file management data and leave data on the card intact. It is recommended that the card either be physically destroyed or that commercially sold software be used to completely delete any data on the card. Note that managing card data is the owner's responsibility.

Information on software for this product

1. Included with this product is software licensed under the GNU General Public License (GPL) and GNU Lesser General Public License (LGPL), and users are hereby informed that they have the right to obtain, change and redistribute the source codes of this software.
   Details on GPL and LGPL can be found on the installation CD provided with the unit. Refer to the folder called "LDOC". (Details are given in the original (English-language) text.)
   To obtain the source codes, go to the following home page:
   https://eww.pavc.panasonic.co.jp/pro-av/
   The manufacturer asks users to refrain from directing inquiries concerning the source codes they have obtained and other details to its representatives.
2. Included with this product is software which is licensed under MIT-License.
   Details on MIT-License can be found on the installation CD provided with the unit. Refer to the folder called "LDOC". (Details are given in the original (English-language) text.)

This product is licensed under the AVC Patent Portfolio License for the personal and non-commercial use of the following activities of a consumer but no license is granted or implied for any other use.

- Encode video in compliance with the AVC standard ("AVC video")
- Decode AVC video that was encoded by a consumer engaged in a personal and non-commercial activity.
- Decode AVC video that was obtained from a video provider licensed to provide AVC video

Additional information may be obtained from MPEG LA, LLC (http://www.mpegla.com).

Trademarks

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- Multi Media Card (MMC) is a registered trademark of Infineon Technologies AG.
- Apple, Macintosh, Mac OS are registered trademarks or trademarks of Apple, Inc. in the United States and/or other countries.
- Unislot is a registered trademark of Ikegami Tsushinki Co., Ltd.
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Contents

Read this first! 2
Precautions for Use 4

Chapter 1 Overview

Camera Unit Features 8
Recording and Playback Features 10
Outline of operations 12
Saving and editing on external devices 12
System Configuration 13
Standard accessories 14

Chapter 2 Parts and Their Functions

Power Supply and Accessory Mounting Section 15
Audio (input) Function Section 16
Audio (output) Function Section 17
Shooting and Recording/Playback Functions Section 18
Menu/Thumbnail Operation Section 22
Time Code Section 23
Warning and Status Display Functions 24
LCD Monitor 24
Viewfinder 25

Chapter 3 Recording and Playback

Setting Date and Time of Internal Clock 26
P2 Cards 28
Inserting P2 Cards 28
Removing P2 Cards 28
To Prevent Accidental Erasure of P2 Card Content 29
P2 CARD ACCESS LED and status of P2 cards 29
P2 card recording times 30
Handling P2 Card Recording 31
Basic Procedures 32
Shooting 33
Normal Recording 34
Standard and Native Recording 35
Standard recording (pull-down recording) 35
Native recording 35
Variable Frame Rate (VFR) Recording 36
Native VFR Recording 36
Standard VFR recording(pulldown recording) 36
Using VFR Recording Function 37
Special Recording Modes 39
Pre-recording (PRE REC) 39
Interval recording (INTERVAL REC) 40
One-shot recording (ONE SHOT REC) 40
Loop recording (LOOP REC) 41
PROXY Recording Function (Optional) 41
Hot Swap Recording 41
REC REVIEW Function 41
Shot Marker (SHOT MARK) Recording Function 42
Text Memo Recording Function 42
Normal and Variable Speed Playback 43

Chapter 4 Adjustments and Settings for Recording

Selecting recording signals 44
List of recording formats and functions 45
Recording settings and recording function table 47
Selecting video output 48
List of recording, playback and output formats 48
Adjusting the White Balance and Black Balance 51
Adjusting the White Balance 51
Adjusting the Black Balance 52
Setting the Electronic Shutter 54
Setting the Shutter Mode and Speed 54
Placing the Camera-recorder in SYNCHRO SCAN Mode 55
FBC (Flash Band Compensation) Function 56

Setting FBC function ... 56
Assigning functions to USER buttons ... 57
Selecting Audio Input Signals and Adjusting Recording Levels ... 58
Selecting Audio Input Signals ... 58
Adjusting Recording Levels ... 58
Selecting Function for the FRONT AUDIO LEVEL Control ... 59
CH3 and CH4 Recording Levels ... 59
Setting Time Data ... 60
Recording time codes and user bits ... 61
Setting user bits ... 63
Entering the User Bits ... 63
Setting the Time Code ... 65
Externally Locking the Time Code ... 67
Outputting the time code externally ... 68
GENLOCK and time code input/output connection and setup ... 69
Counter Setting and Display ... 69
Viewfinder Screen Status Displays ... 70
Viewfinder Status Indication Layout ... 70
Selecting Viewfinder Display Information ... 70
Screen displays ... 71
Center Information Display ... 74
Checking and displaying shooting status ... 76
MODE CHECK indication ... 77
Center marker display ... 78
Safety zone markers ... 78
Audio level meter magnification ... 78
Zebra pattern display ... 79
Focus assist function ... 80
Adjusting and setting the LCD monitor ... 81
Waveform monitor function ... 82
Adjusting and Setting up the Viewfinder ... 83
Adjusting Right and Left Viewfinder Position ... 83
Diopter Adjustment ... 83
Using the Viewfinder ... 83
Emphasizing Image Outlines ... 84
Setting the viewfinder to monochrome mode ... 84
Handling setup data ... 85
Configuration of setup data files ... 85
Handling SD memory cards ... 86
Formatting, Writing and Reading an SD memory card ... 86
How to Use Scene File Data ... 87
Saving scene files and other settings on SD memory cards ... 89

Chapter 5 Preparation

Power Supply ... 91
Mounting the Battery and Setting the Battery Type ... 91
Use of the external DC power supply ... 93
Mounting and Adjusting the Lens ... 94
Mounting the Lens ... 94
Adjusting the Lens Flange Back ... 95
White Shading Compensation ... 96
Setting Chromatic Aberration Compensation (CAC) ... 97
Preparing for Audio Input ... 100
When Using the Front Microphone ... 100
Using a wireless receiver ... 100
When Using Audio Devices ... 101
Attaching Accessories ... 102
Mounting the Camera on a Tripod ... 102
Attaching the Shoulder Strap ... 102
Attaching the Rain Cover ... 103
Attaching the FRONT AUDIO LEVEL Control Knob ... 103
Attaching the Eye Cup ... 103
DC OUT Connector and External REC Start/Stop Switch Connection ... 104
Connecting the AJ-RC10G Remote Controller ... 105

Chapter 6 Manipulating Clips with Thumbnails

Thumbnail Operations ... 106
Thumbnail Manipulations Overview ... 106

Thumbnail Screen 107
Selecting Thumbnails 109
Playing back Clips 109
Switching the Thumbnail Display 110
Changing thumbnails 111
Shot Mark 111
Text Memo 112
Deleting Clips 113
Restoring Clips 114
Reconnection of Incomplete Clips 114
Copying Clips 114
Setting of Clip Meta Data 115
Setting of Proxy (optional) 119
Formatting a P2 Card 119
Formatting SD memory cards 120
Setting the Thumbnail Display Mode 120
Properties 121

Chapter 7 Menu Operations

Viewfinder and LCD Menus 125
Using the menus 125
Initializing the menu settings 126
Setup menu structure 127
Setup menu list 129
SCENE FILE screen 129
SYSTEM SETUP screen 131
SW MODE screen 133
RECORDING SETUP screen 134
AUDIO SETUP screen 135
OUTPUT SEL screen 137
DISPLAY SETUP screen 138
BATTERY SETUP screen 140
CARD FUNCTIONS screen 141
LENS SETUP screen 142
OTHER FUNCTIONS screen 142
DIAGNOSTIC screen 143
OPTION MENU screen 144

Chapter 8 Connecting to External Devices

Functionality Provided by Connections to USB 2.0 Connector 145
Connecting to a computer in USB device mode 145
USB host mode 146
Connections to the DVCPRO/DV Connector 151
Recording signals input to the DVCPRO/DV connector 151
Control of external devices through 1394 connection 152

Chapter 9 Maintenance and Inspections

Inspections Before Shooting 153
Preparing for Inspections 153
Inspecting the Camera Unit 153
Inspecting the Memory Recording Functions 154
Maintenance 156
Eyepiece Care 156
Cleaning Inside the Viewfinder 156
Charging the internal battery 156
Warning System 157
Warning Description Tables 157
Warning and Error Display for Thumbnail Operation and USB HOST MODE 159
Updating the firmware incorporated into the unit 161

Chapter 10 Index

Chapter 11 Specifications

Dimensions and specifications 166
Dimensions 166
Specifications 166
Connector signal description 170

Chapter 1 Overview

The AG-HPX301E P2 memory card camera-recorder features a camera unit equipped with a 1/3 inch 2.2 megapixel 3MOS sensor and a recording and playback unit that provides AVC-Intra 100 compression recording as standard to offer HD full pixel and full sampling for superb image quality and high-quality video.
It handles multiple HD and SD formats: AVC-Intra, DVCPRO HD, DVCPRO50, DVCPRO and DV compression recording.
The P2 card provides a reliability, speed and IT functionality that no other media can match and is destined to revolutionize recording and editing paradigms.

■ Multiple HD/SD formats

The camera supports both the HD and SD video formats making it ready for news gathering, program production and film making in a wide range of professional applications and content production. In 1080i/720P HD recording for broadcasting, the camera uses the highly reliable AVC-Intra or DVCPRO HD codec while also supporting SD multi-codec (DVCPRO50, DVCPRO or DV) recording capability.
The AG-HPX301E provides high quality and uncompressed, 16-bit, 48 kHz, 4-channel recording of audio in all formats.

■ Variable frame rate makes speed effects possible (in the 720P format)

The AG-HPX301E comes with the variable frame rate feature developed for the VariCam HD Cinema camera. In 720P mode [*1], the frame rate can be set to any of 20 steps between 12P and 50P (60P). This puts features such as undercranking (dropping frames) and overcranking (high frame rate) for quick motion and slow motion cine-like effects at the disposal of the camera crew.

■ Native mode/over 50P (60P) mode selectable

- Native mode:
  Playing back a recording made at a frame rate set in the camera at the normal rate provides speed effects without using a frame rate converter. Native mode also extends the recording time of a P2 card.
- 720P over 50P (60P) mode:
  Use of a DVCPRO HD recorder such as the AJ-HD1400 or the FOCUS FS-100 hard disk recorder enables the AG-HPX301E to make backup recordings with a DVCPRO HD stream from the DVCPRO/DV connector. [*2]

■ 1080/480 24P advanced mode

Recording 1080/24P or 480/24P makes it possible to select 24PA (advanced) mode [*3]. Using 2:3:3:2 pulldown, the 24PA mode performs 60i conversion to enable nonlinear editing [*4] maintaining an image quality that is better than normal 24P (2:3 pulldown). Recording at 30P applies a 2:2 pulldown.

Camera Unit Features

■ Progressive 3MOS sensor

The AG-HPX301E is equipped with a 1/3 inch 2.2 megapixel 3MOS sensor that enables HD full pixel recording for high-resolution video.

■ 14-bit digital circuit

The high-performance DSP (Digital Signal Processor) in the camera offers 14-bit signal input and 20-bit internal processing. It handles gamma settings and other adjustments for each R/G/B color in 1080/50i (60i) video as well as conversion to all HD/SD formats (P/I conversion, line conversion and down conversion). Because of this high-quality images can be produced in all video formats.

■ Seven gamma curves including cine-like gamma

To expand camera capabilities, the AG-HPX301E offers seven gamma curves including cine-like gamma to easily produce recordings with the characteristic warm tone of film.

---

*1 1080 and 576 (480) recording is performed at a fixed frame rate of 25P (30P, 24P).
*2 The AVC-Intra mode does not allow the output of a DVCPRO HD stream from the DVCPRO/DV connector.
*3 Not available with the AVC-Intra codec.
*4 For details on compatible systems, visit the Web site listed below.
https://eww.pavc.panasonic.co.jp/pro-av/
24P and 30P indicate recording at 23.98P and 29.97P, respectively, while 60P and 60i indicate recording at 59.94P and 59.94i, respectively.

■ Slow, synchro and high speed shutter

The shutter speed can be set from a slow speed of 1/6 s up to a maximum speed of 1/7200 s[*1]. Combined with the variable frame rate functions, this allows you to create blurring or stop motion effects. The AG-HPX301E also features a synchro scan function that is ideal for capturing screen shots from a computer monitor.

■ Scene file dial

This dial allows you to instantly retrieve settings that suit shooting conditions. Six preset files are provided, and you can change the file names and their settings as desired. You can also save up to four files to an SD or SDHC memory card (both referred to as “SD memory card” below) and load files from an SD memory card.

■ Shooting assist functions

- USER buttons:
  Three USER buttons each of which can be assigned a frequently used function for immediate access.
- Focus assist:
  Magnifies the center portion of the image and displays a focus bar to facilitate focusing.
- Eight files for compensating lens chromatic aberration and four files for correcting shading for interchangeable lenses are provided.
- Variable color temperature:
  Allows fine adjustment after setting the white balance.
- REC REVIEW:
  Provides a quick check of the last few seconds of the most recently recorded clip.
- 4-position optical ND filter provided.

■ Chromatic aberration compensation (CAC)

This function automatically corrects the registration error caused by the slight chromatic aberration that the lens cannot compensate for, in order to minimize color bleeding into surrounding image areas.

■ Remote control support

The camera supports the AJ-RC10G (optional accessory) remote control unit. The remote control allows you to adjust camera image and recording controls at a distance while viewing what you are shooting.

■ Auto Tracking White Balance (ATW)

Automatically adjusts the white balance of the subject in real-time, a convenient function for quick adjustment in recording situations where there is no time for normal white balance adjustment.

■ DRS (Dynamic Range Stretcher) function

This function compresses the video signal level while maintaining contrast to extend the dynamic range making it possible to correctly render highlight areas without overexposure and loss of detail that would otherwise occur.[*2]

*1 This is the shutter speed value when 3.0d is configured for the synchro scan mode.

*2 The DRS function is not available in 1080/25P (1080/30P, 1080/24P) modes.

Recording and Playback Features

■ A variety of interfaces

- USB 2.0 connector (HOST/DEVICE)
  A USB 2.0 connection to a computer or other device allows you to use P2 cards in the camera as mass storage. The USB host function makes it possible to save P2 card data to an external hard disk connected via USB 2.0 and clips stored on the hard disk can be viewed and written back to a P2 card.
- DVCPRO/DV input and output provided as standard feature
  IEEE1394 compliant external devices can be connected to enable output and input via the digital interface. Connect a 6-pin plug to this connector. Note that the connector does not support bus power.
  Input and output via IEEE1394 is not available when the AVC-Intra codec is selected.

■ P2 cards for high capacity, high speed and high reliability

In addition to exceptional resistance to shock, vibration and temperature fluctuations, the P2 (Professional Plug-in) card has a reliability that guarantees long-term repeated recording/initialization that a tape or hard disk system with their moving parts could never match.
The connectors are professional grade to withstand long-term continual insertion and removal.
The P2 card stores the AV data for each shooting session as a single file that is immediately accessible for nonlinear editing or transfer over a network without digitizing. Transfer speeds far surpassing those of optical disks also help to speed up production processes. The P2 card complies with PC card standards and can be directly plugged into the PC card slot on a computer. *1
The two P2 card slots allow continuous recording on two P2 cards and also offer the following recording capabilities in a memory card camera-recorder.

- Card selection:
  In standby status, you can instantly select (switch to) the slot of the card you wish to record on *2 Recorded content can be quickly passed on to editing or transferred to minimize interruptions in recording making it far more efficient than systems where tapes or disks have to be exchanged.
- Hot-swap recording:
  Cards can be replaced during recording. A full memory card can be replaced while recording is made on another card. Successively swapping cards in this way gives you virtually unlimited recording capacity.
- Loop recording:
  Setting the camera for consecutive overwriting, you can repeatedly rerecord on the inserted P2 cards, always maintaining a recording of the most recent, specific period of time.

■ Immediate startup and reliable data protection

When you press the REC button in standby mode, the camera instantly finds a blank area on the P2 card and begins recording. Unlike a VTR system, there is no need to locate a blank section before recording. It can begin recording immediately even when you are using it to preview video. In normal use, there is no chance of accidentally deleting a recording. Recordings will not be erased unless you intentionally delete a file or initialize the card.

*1 This requires the installation of a P2 card driver (provided with each device). The P2 card driver runs under Windows® Vista, Windows® XP or Windows® 2000.
*2 This assumes that the SLOT SEL function is assigned to a USER button (USER MAIN, USER1 or USER2).

■ Other features

- Pre-rec:
  This function provides a way to capture moments you otherwise would have missed. In the standby mode, the camera will store video and audio for up to 3 seconds in HD and 7 seconds in SD. When you press the REC button, the three or seven seconds of immediately prior video data stored in internal memory is added at the beginning of the clip you record.
- One-shot REC:
  Convenient for producing animation, this mode records for a set time (from 1 frame to 1 second) each time you press the REC button.
- Interval REC:
  Recording one frame at a time at set intervals (from 2 frames to 10 minutes), this mode is useful for monitoring, supervision and special ultra undercranking effects.
- Proxy recording (with AJ-YAX800G installed)
  Installing an optional video encoder card (AJ-YAX800G) in P2 slot number 2 makes it possible to record MPEG4 format video, time code data and other real-time data to P2 cards or SD memory cards simultaneous with camera recording of video and audio. This is a convenient feature for checking clip content and speeding up editing work flow.

■ Clip thumbnail preview

The camera records each cut as a clip (file) and automatically attaches a thumbnail image and file information to it. To preview a clip on the LCD monitor or to check clip data, simply choose the clip you want from the list of thumbnails. These thumbnails and the file data can be viewed on a PC (P2 Viewer *1) or processed in a nonlinear editing program.

■ Shot marker and text memo

If desired, you can add a simple OK/reject shot marker to each clip either during or after recording. When a P2 card is mounted in a PC (P2 Viewer), the PC will display only marked clips.
A text memo function is also provided. Pressing the USER button to which the text memo function has been assigned anywhere in a clip during recording or in preview mode allows you to attach empty post-it like text memos (up to 100) that can later be filled with text on a PC (P2 Viewer).
Using the camera copy function, you can create a new clip by stripping out the desired frames from a clip by copying data between text memo labels.

■ SD memory card slot

The camera provides an SD memory card slot for saving and loading scene files and user settings. A metadata upload file (created using P2 Viewer) containing the name of the person who shot the video, the name of the reporter, the shooting location or a text memo and other information can be saved to an SD memory card. This data file can be loaded as clip metadata.

■ HD/SD SDI output and downconverter supported

Video line outputs (3 BNC connectors) are provided as standard. These outputs can flexibly handle both monitor and line recording. A down-converter is also built-in. Aspect mode can also be selected.

- SDI OUT (HD/SD) 1 system, 2 outputs:
  The HD-SDI outputs allow you to make backups on an external VTR (with HD-SDI input) in synch with REC button operation. SD-SDI can also down convert and output HD content.
- VIDEO OUT:
  Outputs down converted SD video (composite video).

■ Fine adjustment of sound recording level

The camera features a front-mounted control for fine adjustment of the sound recording level. This control is particularly useful for adjusting the sound level when you have to control both video and audio recording. The control can be disabled.

■ Unislot wireless receiver compatible

The AG-HPX301E is designed to work with optional slot wireless receivers. (page 100)
The camera supports 2-channel wireless receivers.

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*1 "P2 Viewer" is a Windows® PC viewing software that can be downloaded free of charge by P2 card users.

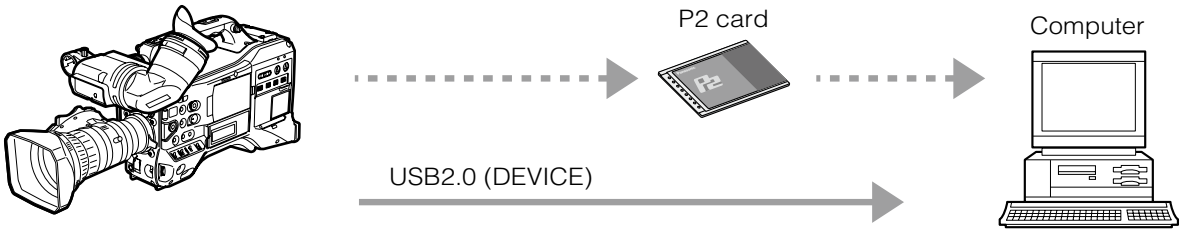
Outline of operations

The AG-HPX301E records video on P2 cards. Excelling at high transfer speeds, the P2 card enables high vision recording and smooth editing and dubbing.

Saving and editing on external devices

Using USB DEVICE mode to connect an external device via the USB 2.0 connector (Page 145)

The data (file) is transferred for nonlinear editing on your computer or other unit.

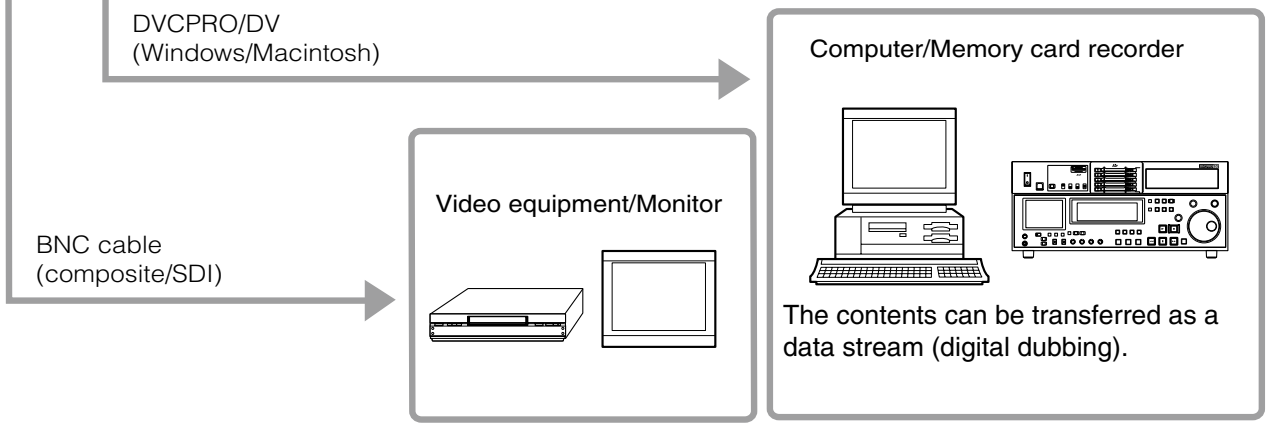


Using USB HOST mode to connect an external device via the USB 2.0 connector (Page 146)

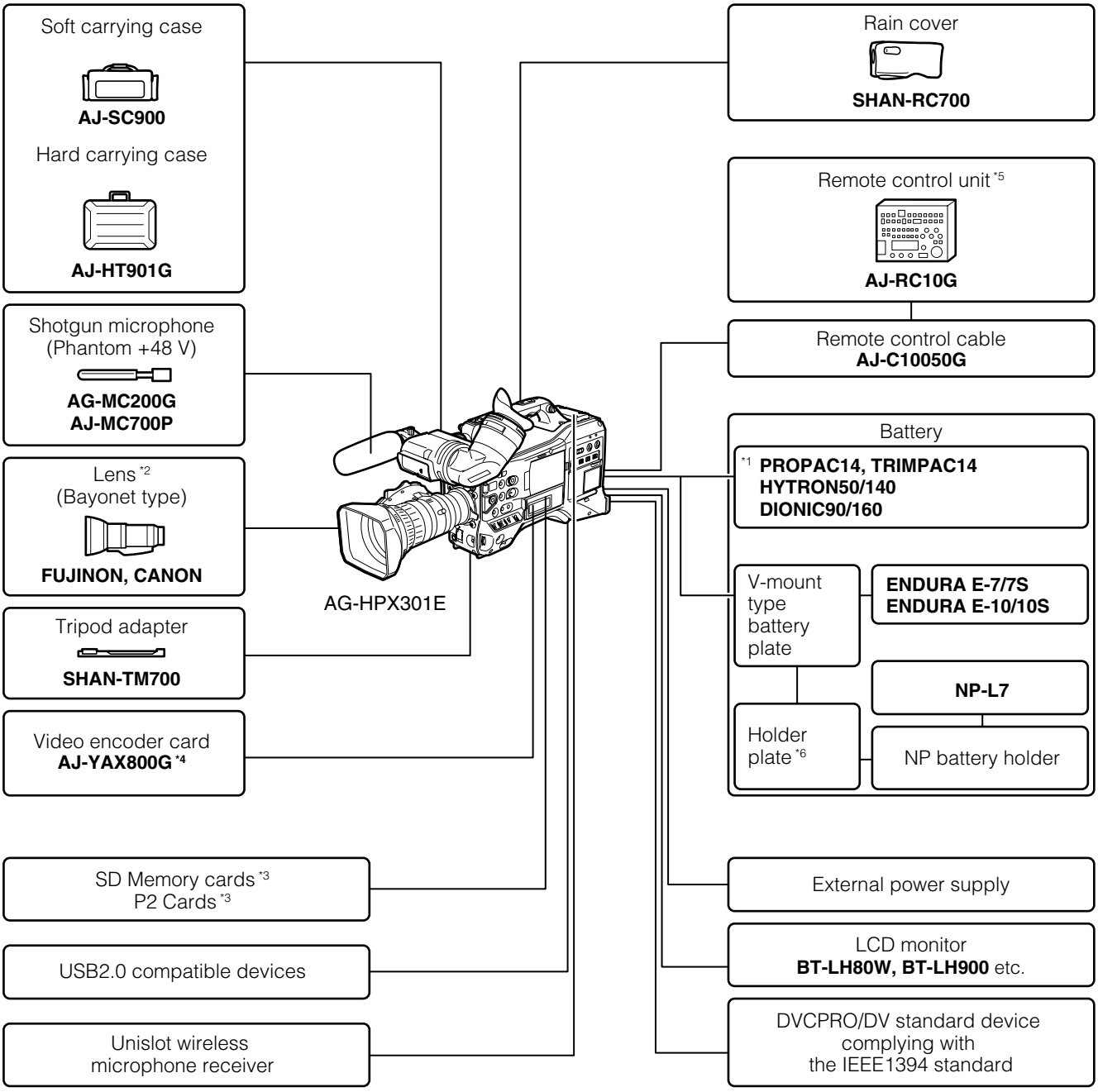
The unit directly controls the external hard disk drive, and transfers the data (file) to it.



Connecting an external device via the DVCPRO/DV connector (Page 151)

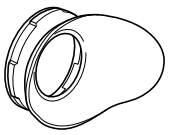
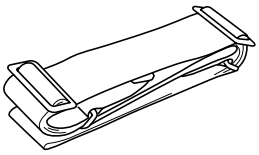
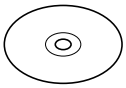


System Configuration



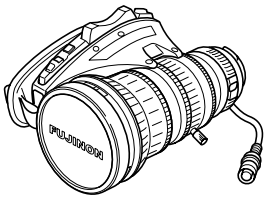
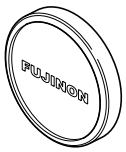
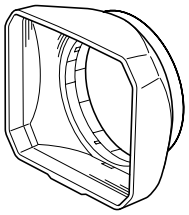
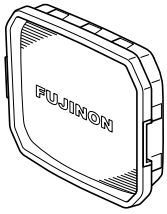
*1 The camera is equipped with a battery holder as standard.
*2 The camera comes with a Fujinon lens.
*3 For the latest information on P2 cards and SD memory cards not available in the operating Instructions, visit the P2 Support Desk at the following Web sites.
https://eww.pavc.panasonic.co.jp/pro-av/
*4 For details, refer to the AJ-YAX800G User's Guide on the supplied CD-ROM.
*5 For details, refer to the AJ-RC10G User's Guide on the supplied CD-ROM.
*6 Attach the NP battery holder to the holder plate before fixing it to the V-mount type battery plate.

Standard accessories

Eye cup  For details, refer to [Attaching the Eye Cup] (page 103).	Shoulder belt  For details, refer to [Attaching the Shoulder Strap] (page 102).	FRONT AUDIO LEVEL knob (screw included)  For details, refer to [Attaching the FRONT AUDIO LEVEL Control Knob] (page 103).	Mount cap *1 
XLR connector cap *1 	BNC cap *1 	CD-ROM 	

*1 This component is part of the camera.

■ Accessories manufactured by Fujinon Co., Ltd.

Lens  For details, refer to [Mounting the Lens] (page 94).	Front lens cap *2 	Rear lens cap *2 	Zoom lever *2 
Connector cap *2 	Lens hood 	Lens hood cap *3 	

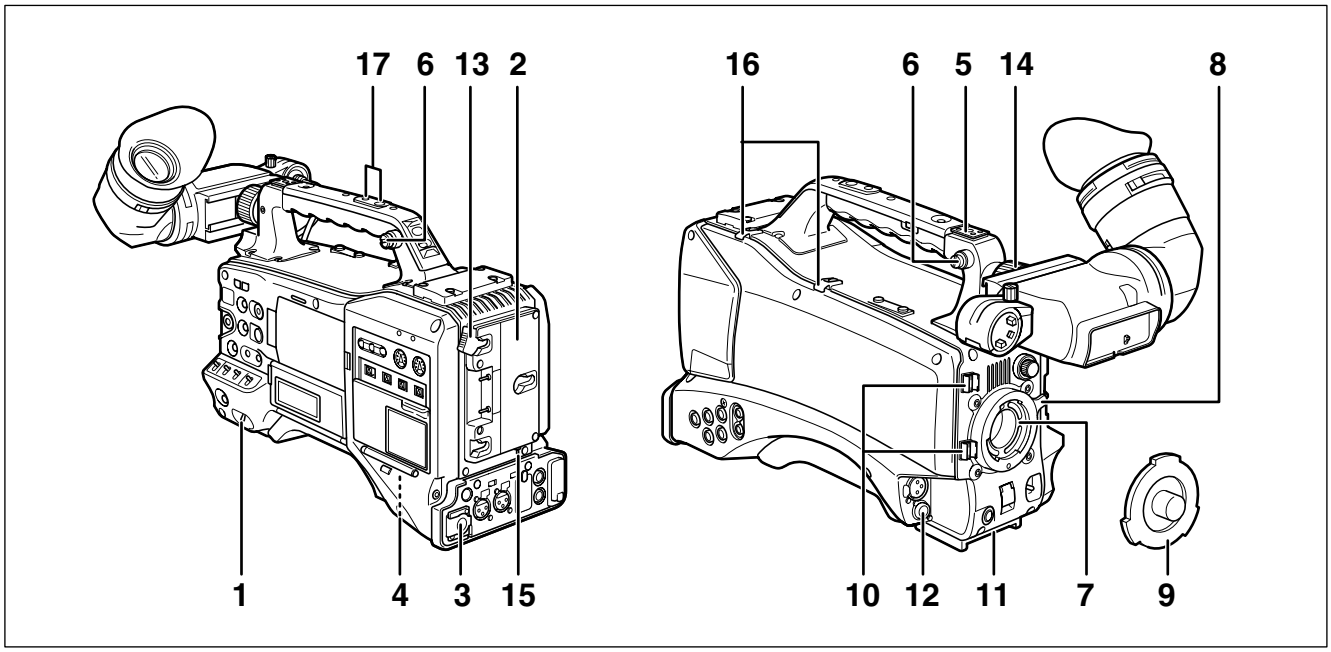
*2 This component is part of the lens.
*3 This component is part of the lens hood.

◆ **NOTE**

- **Be sure to appropriately dispose of the packing material when you have unpacked the product.**
- **Consult your supplier regarding purchases of accessories. For information on the accessories manufactured by Fujinon Co., Ltd., consult Fujinon supplier or representative.**

Chapter 2 Parts and Their Functions

Power Supply and Accessory Mounting Section



1 POWER switch
Use to turn the power on and off.

2 Battery holder
A battery from Anton/Bauer is mounted here.
For details, refer to [Mounting the Battery and Setting the Battery Type] (page 91).

3 DC IN (external power input) socket (XLR, 4P)
Connect this camera to an external DC power supply.
For details, refer to [Use of the external DC power supply] (page 93).

4 BREAKER switch
This switch is located on the camera base.
When an excessive amount of current is fed through the video camera recorder, due to a malfunction, the breaker automatically turns off the power to protect the device. Press this button after conducting an internal inspection or repair. The camera will power up if it is working normally.

5 Light shoe
A video light or similar accessory can be attached here.
(Size of holes for securing screws)
• 1/4-20UNC (6 mm or shorter screws)

6 Shoulder strap fittings
The shoulder strap is attached here.
For details, refer to [Attaching the Shoulder Strap] (page 102).

7 Lens mount (1/3-bayonet mount)
The lens is attached here.
For details, refer to [Mounting the Lens] (page 94).

8 Lens lever
Tighten this lever to lock the lens to the lens mount.
For details, refer to [Mounting the Lens] (page 94).

9 Mount cap
To remove the cap, raise the lens lever. Replace the cap when a lens is not mounted.

10 Lens cable/microphone cable clamp
This clamp secures the lens and microphone cables.
For details, refer to [Mounting the Lens] (page 94).

11 Tripod mount
To mount the camera on a tripod, attach the optional tripod adapter (SHAN-TM700) here.
For details, refer to [Mounting the Camera on a Tripod] (page 102).

12 Lens jack (12-pin)
The lens connection cord is connected here. For a detailed description of your lens, refer to the manufacturer's instruction manual.

13 Battery release lever
Pull down the release lever to release the battery.

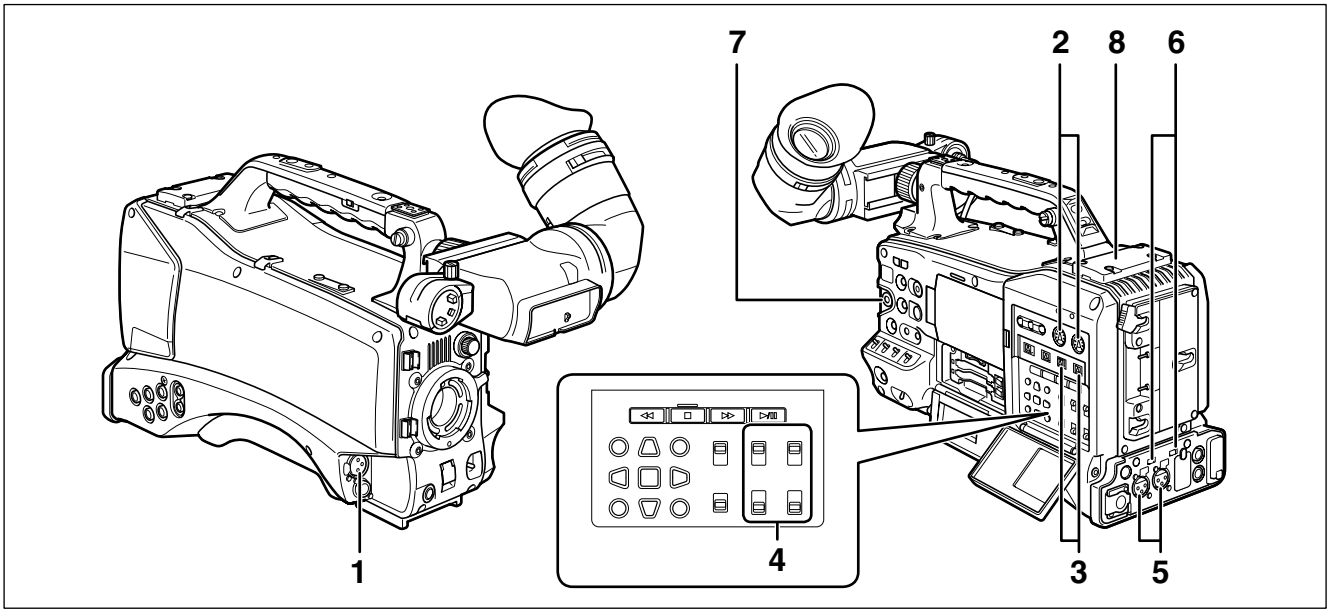
14 Viewfinder left-right positioning ring
For details, see [Adjusting Right and Left Viewfinder Position] (page 83).

15 Light control switch
For details, refer to [Power Supply] (page 91).

16 Cable holder
Used to secure the light and microphone cables.

17 Accessory mounting hole
Accessories can be attached here. Do not use this hole for purposes other than attaching accessories.
(Size of holes for securing screws)
• 1/4-20UNC (10 mm or shorter screws)
• 3/8-16UNC (10 mm or shorter screws)

Audio (input) Function Section



1 MIC IN (microphone input) jack (XLR, 3-pin)
- Connect a microphone (optional accessory) to this jack.
- A phantom-powered microphone may be connected. To use a phantom-powered microphone, set the menu option F.MIC POWER to ON in the AUDIO SETUP screen.

For details, refer to [Preparing for Audio Input] (page 100).

2 AUDIO LEVEL CH1/CH2 (audio channel 1/2 recording level adjustment) controls
- With the AUDIO SELECT CH1/CH2 switch positioned to MAN, these controls can be used to adjust the recording levels for audio channels 1 and 2.
- Note that the controls are designed to be locked. For adjustment, each control must be depressed while turning.

3 AUDIO SELECT CH1/CH2 (audio channel 1/2 automatic/manual level adjustment selector) switch
Use this switch to select recording level control mode for Audio Channels 1 and 2.

AUTO: Recording level automatically controlled.
MAN: Recording level manually controlled.

For details, refer to [Adjusting Recording Levels] (page 58).

4 AUDIO IN (audio input selector) switch
Use this switch to select signals recorded through audio channels 1 – 4.

FRONT: Records signals from a microphone connected to the MIC IN jack.
W.L.(WIRELESS): Records signals from a wireless receiver.
REAR: Records signals from audio devices or microphones connected to the AUDIO IN CH1/CH2 connectors.

◆ **NOTE**

To record 2-channel wireless input, switch both CH1 and CH2 to W.L. position and set the menu option WIRELESS TYPE in the AUDIO SETUP screen to DUAL.

5 AUDIO IN CH1/CH2 (audio channel 1/2) connectors (XLR, 3-pin)
Audio devices or microphones may be connected here. For details, refer to [When Using Audio Devices] (page 101).

6 LINE/MIC/+48V (line input/mic input/mic input +48V) selector switch
Use to select audio signals input to the AUDIO IN CH1/CH2 connectors.

LINE: Line input for audio signals input from an audio device
MIC: Audio signal input from microphone with internal power supply (the camera does not supply power to a phantom microphone).
+ 48V: Audio signal input from a microphone that requires an external power supply (the camera supplies power to a phantom microphone).

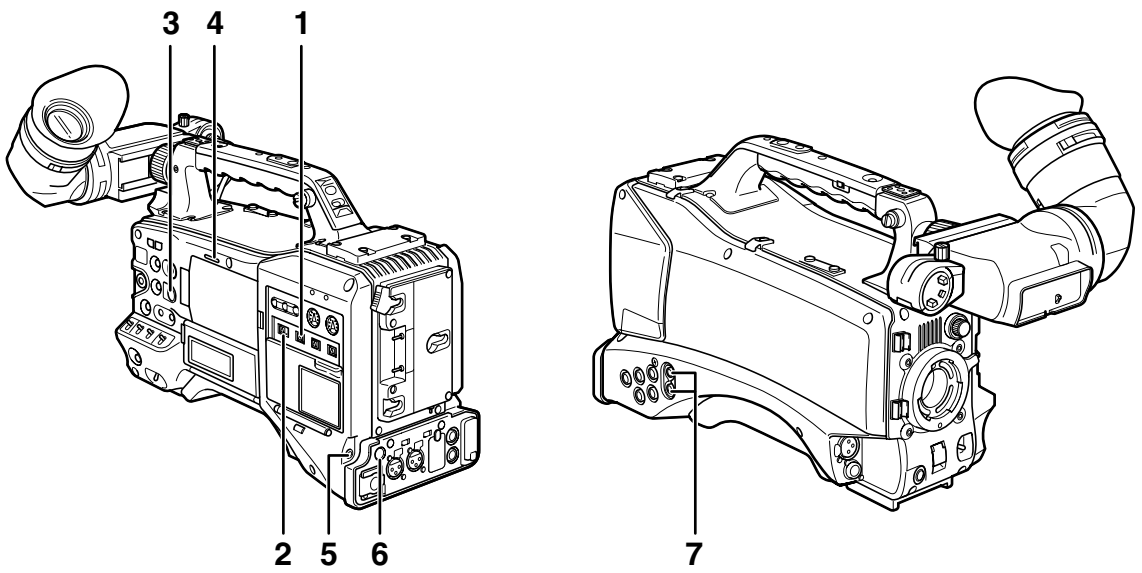
◆ **NOTE**

Power is supplied when the menu option R.MICPOWER in the AUDIO SETUP screen is set to ON.

7 FRONT AUDIO LEVEL (audio recording level adjustment) control
- This control adjusts the recording level of audio channels 1 and 2.
- With the AUDIO SELECT CH1/CH2 switch positioned to MAN, this control can be used to adjust the recording levels for audio channels 1 and 2.
- Use the menu options FRONT VR CH1 and FRONT VR CH2 in the AUDIO SETUP screen to select the input connector this control will be used for.

8 Wireless slot
A Unislot wireless receiver (optional accessory) may be attached here.

Audio (output) Function Section



1 MONITOR SELECT (audio channel) CH1/2, CH3/4 selector switch

Use this switch to select the audio channel whose signals are output to the speaker, earphones or AUDIO OUT connectors.

CH1/2: Signal output of audio channels 1 and 2.

CH3/4: Signal output of audio channels 3 and 4.

The channel indications of the audio level meters in the viewfinder and on the LCD monitor show the channels selected with this switch.

2 MONITOR SELECT (audio selection) CH1/3, ST, CH2/4 selector switch

This switch and the MONITOR SELECT CH1/2, CH3/4 switch select the audio signal output to the speaker, earphones and AUDIO OUT connectors.

MONITOR SELECT switch (left)		MONITOR SELECT switch (right)	
		CH1/2	CH3/4
MONITOR SELECT	CH1/3	Audio Channel 1	Audio Channel 3
	ST	Stereo signals from Audio Channels 1 and 2*1	Stereo signals from Audio Channels 3 and 4*1
	CH2/4	Audio Channel 2	Audio Channel 4

*1 MIX in the menu option MONITOR SELECT in the AUDIO SETUP screen allows you to change stereo signals to a mixed signal.

3 MONITOR (volume) control

Use to control the alarm sound volume and volume of sound output from the monitor speaker and earphones.

4 Speaker

The speaker outputs EE sound during recording and reproduced sound during playback. The speaker emits an alarm sound when the warning lamp and indicator light or blink. EE sound and reproduced sound are not output during alarm sound output.

When earphones are connected to the PHONES connector, the sound from the speaker is automatically muted.

5 PHONES (earphones) jack (mini jack)

This connector is designed for audio monitoring (stereo) earphones.

6 DC OUT (DC power supply) output socket.

This is a 12 V DC output socket that provides a maximum current of 1.5 A.

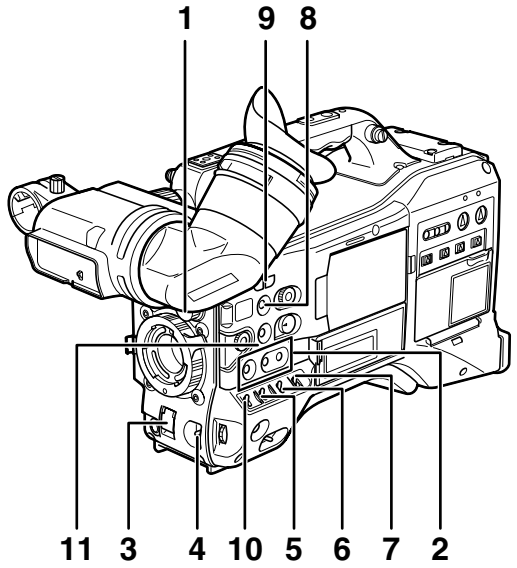
◆ NOTE

Be sure to check polarity before connecting an external device as incorrect connection could lead to damage.

7 AUDIO OUT connector

- This connector outputs audio signals recorded on audio channels 1/2 and 3/4.
- Use the MONITOR SELECT CH1/2, CH3/4 selector switch to select output signals.

Shooting and Recording/Playback Functions Section



■ Shooting and Recording (camera unit)

1 ND FILTER (filter switching) control

Use this control to adjust the amount of light entering the MOS sensor during shooting in strong outdoor lighting.

Control position	Setting	Description
1	CLEAR	Does not use the ND filter.
2	1/4ND	Reduces the amount of light entering the MOS sensor to 1/4.
3	1/16ND	Reduces the amount of light entering the MOS sensor to 1/16.
4	1/64ND	Reduces the amount of light entering the MOS sensor to 1/64.

2 USER MAIN, USER1 and USER2 buttons

These buttons can be assigned user-selected functions in a setting menu. Each button, when pressed, performs the assigned function.

For details, refer to [Assigning functions to USER buttons] (page 57).

3 SHUTTER switch

Use to turn the electronic shutter on and off.

OFF: The electronic shutter is off.

ON: The electronic shutter is on.

SEL: Changes the speed of the electronic shutter.

This dial switch returns to its original position when released. Each push in the SEL direction changes the shutter speed.

For details, refer to [Setting the Electronic Shutter] (page 54).

4 AUTO W/B (white/black) BAL switch

AWB: Automatically adjusts the white balance. Set the WHITE BAL switch on the side to [A] or [B] and use this switch to adjust the white balance, which takes a few seconds. The adjusted value is stored in memory.
When the WHITE BAL switch is set to PRST and the AUTO W/B BAL switch is set to AWB to indicate the color temperature, pushing the AUTO W/B BAL switch towards AWB a second time allows you to change the preset color temperature.

ABB: Automatically adjusts the black balance.

For details, refer to [Adjusting the White Balance and Black Balance] (page 51).

5 GAIN selector switch

- This switch adjusts video amplifier gain to suit ambient lighting conditions at the time of shooting.
- Use the menu options LOW GAIN, MID GAIN and HIGH GAIN in the SW MODE screen to set the L/M/H position gain values.
- The factory settings for L, M and H positions are 0 dB, 6 dB and 12 dB, respectively.

6 OUTPUT/AUTO KNEE selector switch

This switch selects the video signals sent from the camera unit to the memory card recorder unit, viewfinder and video monitor.

CAM. AUTO KNEE ON:
Video being recorded through the camera is output with the Auto knee circuit activated. A DRS (Dynamic Range Stretcher) function can be used instead of the AUTO KNEE function. For details, refer to [DRS (Dynamic Range Stretcher) function] (page 9).

CAM. AUTO KNEE OFF:
Video being recorded through the camera is output with the Auto knee circuit turned off. The KNEE point is locked to the level set in the menu.

BARS: Color bar signals are output with the AUTO KNEE circuit turned off.

◆ **NOTE**

■AUTO KNEE function

Usually, when you shoot people or scenery against a strongly lit background and adjust the level to the subject, the background will be totally whited-out, with buildings and other objects blurred. Use of the AUTO KNEE function in situations like these will reproduce the background clearly.

The AUTO KNEE function is effective when:

- **The subject is a person positioned in the shade under a clear sky.**
- **The subject is a person in a vehicle or building and you also want to capture the background visible through a window.**
- **The subject is a high-contrast scene.**

7 WHITE BAL (white balance memory selector) switch

Use to select method of white balance adjustment.

PRST: Use PRST when you have no time to adjust the white balance.
- The factory default setting is 3200 K.
- Use a setting menu or push the AUTO W/B switch towards AWB to display the color temperature. While the color temperature is still indicated, push the AUTO W/B switch once again towards AWB to switch between 3200 K and 5600 K.

A • B: Pushing the AUTO W/B BAL towards AWB will automatically adjust the white balance and save the adjusted value in memory A or memory B.
For details, refer to [Adjusting the White Balance] (page 51).

The setting menu also allows you to assign Auto Tracking White balance (ATW) to B. For details, refer to (page 52).

8 DISP/MODE CHK button

- Press this button to turn off the viewfinder and LCD display. (The time code indication stays on.)
- A second press of the button turns the display back on and holding it down displays shooting conditions and functions assigned to USER switches.
- It also serves to turn off the alarm sound.

9 SYNCHRO SCAN switch

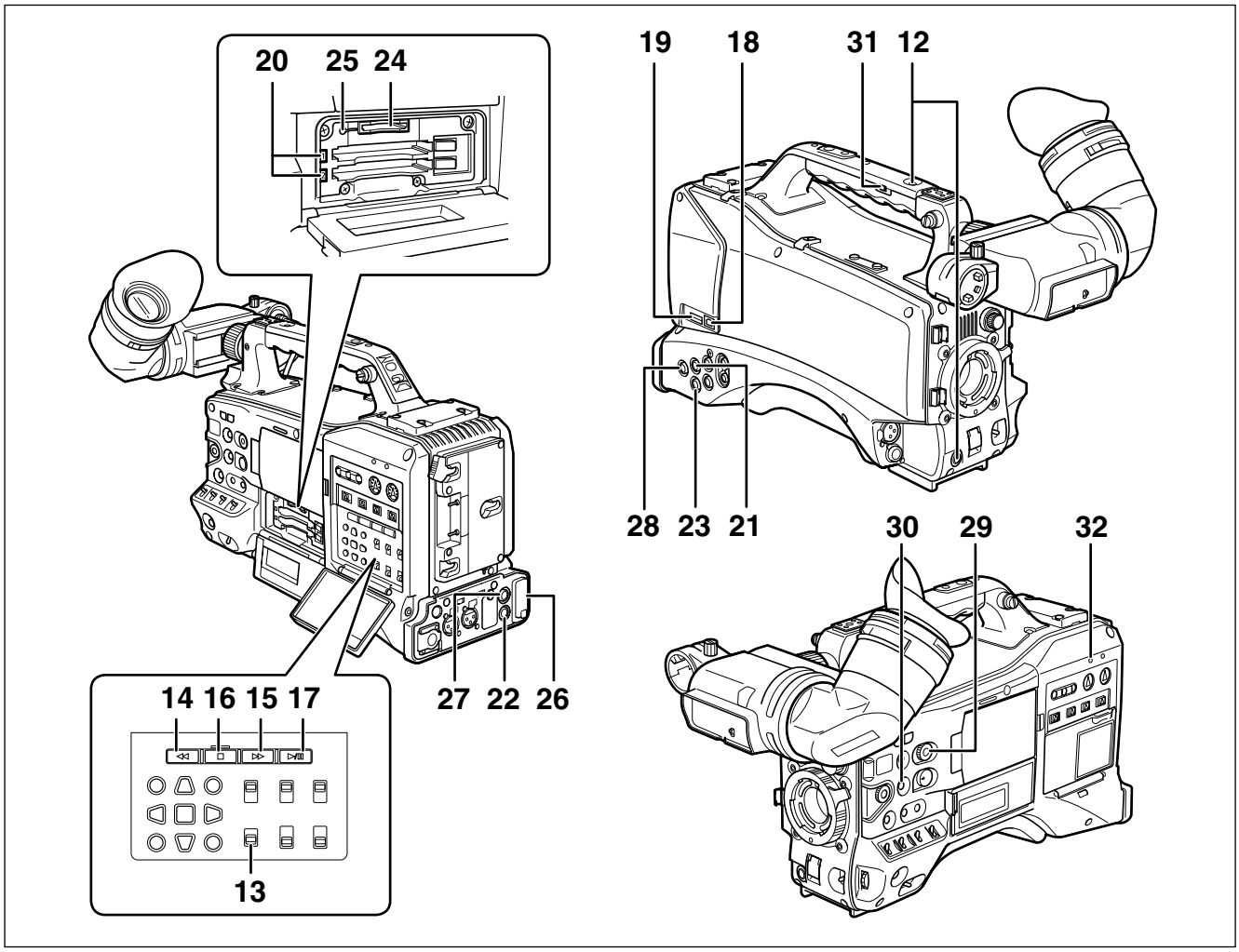
This function adjusts the synchro scan speed when the SHUTTER switch is set to ON and synchro scan is selected.
Pressing the – switch sets a slower shutter speed and pressing the + switch sets a faster one.
For example, to record a computer screen, make adjustments to minimize horizontal bar noise in the viewfinder.
In VFR (Variable Frame Rate) mode, press the JOG dial button and this switch to change the frame rate.
For details, refer to [2. JOG dial button] in [Menu/Thumbnail Operation Section] (page 22).

10 ZEBRA (zebra pattern) switch

Use this switch to display a zebra pattern in the viewfinder and on the LCD monitor.
For details, refer to [Zebra pattern display] (page 79).

11 Focal plane index (ϕ)

This symbol indicates the focal plane of the MOS sensor.
It provides a reference for making accurate focal distance measurements from the subject.



■ Shooting and Recording/Playback Function Section (Recorder Unit)

12 REC button

Press this button to start recording and press once again to stop it.

This button operates in the same way as the VTR button on the lens.

13 SDI OUT CHARACTER switch

Use this switch to control the superimposition of character data onto SDI OUT to indicate status or setting menus.

ON: Superimposes characters.

OFF: Does not superimpose characters.

◆ **NOTE**

In addition to SDI OUT, a setting menu allows you to superimpose characters on VIDEO OUT video.

14 ◀◀ REW (rewind) button

In stop mode, press this button for fast-reverse playback.

During playback, press this button for fast-reverse playback at about 4x normal speed.

If this button is pressed when playback is paused, the beginning of the clip being played is located in pause mode (cue-up mode).

15 ▶▶ FF (fast forward) button

In stop mode, press this button for fast playback.

During playback, press this button for fast playback at about 4x normal speed.

If this button is pressed when playback is paused, the beginning of the next clip is located in pause mode (cue-up mode).

16 ■ STOP button

Press this button to stop playback.

Press this button to stop interval recording and one-shot recording.

17 PLAY/PAUSE button

Press this button to view playback in the viewfinder or on a color video monitor.

Press it during playback to pause playback.

18 USB 2.0 connector (DEVICE)

19 USB 2.0 connector (HOST)

Connect a USB 2.0 cable to this connector.

To enable transfer of data via USB 2.0, set the menu option PC MODE in the SYSTEM SETUP screen to ON. This setting restricts recording, playback and clip operations with the camera. For details, refer to page 146.

20 P2 CARD ACCESS LED

This LED indicates the recording and playback status of each card.

For details, refer to [P2 CARD ACCESS LED and status of P2 cards]. (page 29)

21 GENLOCK IN connector

This connector inputs a reference signal when the camera unit is gen-locked, or when the time code is externally locked.

◆ **NOTE**

• Supply an HD Y signal (1080/50i (59.94i), 720/50P (59.94P)) or a composite signal (576/50i (480/59.94i)) as input reference signal. The subcarrier of VIDEO OUT connector output (composite signal) cannot be externally locked. In SD mode, the signal will not lock to the HD signal.

22 REMOTE connector

Some functions can be remote controlled when the remote control unit AJ-RC10G (optional accessory) is connected to the camera.

For details, refer to [Connecting the AJ-RC10G Remote Controller] (page 105).

23 VIDEO OUT connector

This connector outputs video signals.

- In HD mode, down-converted composite video signals are output.
- Use the menu option DOWNCON MODE in the OUTPUT SEL screen to set signal output. (The factory setting is LETTER BOX.)

24 SD memory card slot

Insert an SD memory card (optional accessory) in this slot. It is used for recording and loading camera setting menus or lens files, uploading meta data and recording proxies (optional).

◆ **NOTE**

■SD memory card precautions

• Use only SD memory cards that conform to the SD standard or the SDHC standard in this camera.

• MultiMediaCards (MMC) cannot be used. (Use of such cards may prevent recording.)

• Be sure to use mini SD card adapters when using mini SD cards with this camera. (Note that this camera will not operate normally when a mini SD adapter is installed without inserting a card. Be sure to insert a card when an adapter is installed.)

• Use of Panasonic SD memory cards and mini SD cards is recommended. Be sure to format such cards in this camera.

• This unit supports the following SD and SDHC memory card capacities.

SD memory cards	8MB/16MB/32MB/64MB/ 128MB/256MB/512MB/1GB/ 2GB
SDHC memory cards	4GB/6GB/8GB/12GB/16GB/ 32GB

For proxy (optional) recording, use 256 MB, 512 MB, 1 GB, 2 GB SD memory cards labeled "High Speed" or SDHC memory cards.

• For the latest information not available in the Operating Instructions, visit the P2 Support Sites at the following Web site.

https://eww.pavc.panasonic.co.jp/pro-av

■About SD and SDHC memory cards

• The SDHC card is a new standard, established by the SD Card Association in 2006, for memory cards with capacities of 2 GB or more.

• The SD logo is a registered trademark.

• MMC (MultiMediaCard) is a registered trademark of Infineon Technologies AG.

25 BUSY (operation mode display) lamp

This lamp indicates the active status of the SD memory card. It stays illuminated when the card is active.

◆ **NOTE**

Do not remove the card while the lamp is on.
The SD memory card could be damaged.

26 DVCPRO/DV connector

An IEEE1394 standard connector for input and output of video, audio and data.

For details, refer to [Connections to the DVCPRO/DV Connector] (page 151).

27 SDI OUT 1 connector

28 SDI OUT 2 connector

- This connector outputs SDI signals.
- Use the menu option SDI SELECT in the OUTPUT SEL screen to select AUTO, 1080i or 576i (480i). This connector does not support up-conversion.
  It outputs the same signals as SDI OUT 1 connector.

29 SCENE FILE dial

This dial allows you to select and load shooting conditions from the scene files prerecorded to each of the six positions.

◆ **NOTE**

During recording, selecting a position with a different frame rate will not change the frame rate until the camera is set to recording standby mode.

For details, refer to [How to use Scene File Data] (page 87).

30 FOCUS ASSIST button

Turns magnification of the center portion of the image on and off.

For details, refer to [Focus assist function] (page 80).

31 REC switch

Switches functions of the REC button on the handle.

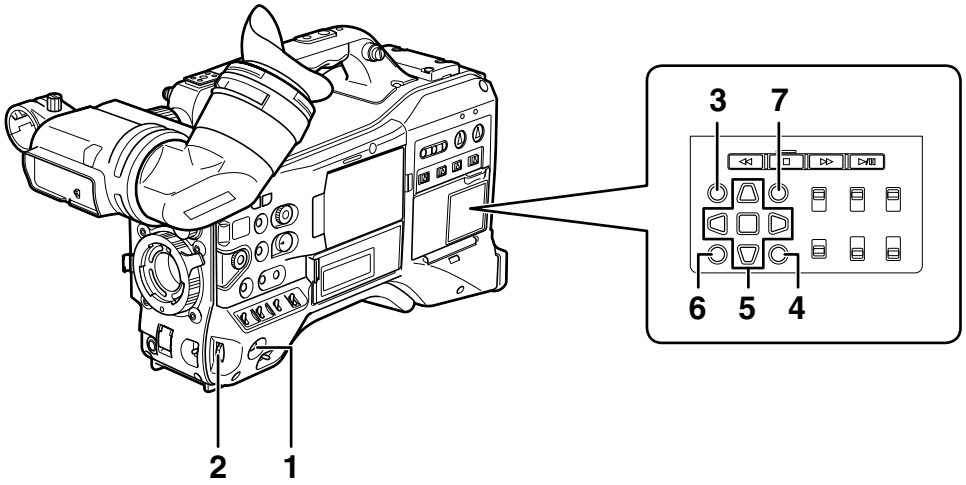
ON: Enables the REC button.

OFF: Disables the REC button.

32 USB lamp

This lamp lights when the camera is in USB mode (PC mode).

Menu/Thumbnail Operation Section



1 MENU button

- Hold down the button to open a setting menu screen. A second press of the button returns the previous image.
- This function is not available in the thumbnail display and during recording.

2 JOG dial button

- Use this button to go between setting menus and to select and set items in open setting menus.
- In a setting menu, turning the JOG dial button downwards moves the menu cursor downwards and turning it upwards moves the menu cursor upwards. Press the JOG dial button to confirm made settings. For more information, see [Using the menus] (page 125).
- In VFR (Variable Frame Rate) mode, press this button and use the SYNCHRO SCAN switch to change frame rates.

◆ **NOTE**

Use the JOG dial button to go between setting menus and select items.

For details, refer to [Viewfinder and LCD Menus] (page 125).

3 Thumbnail button

Press this button to open the thumbnail screen. Note that this switchover cannot be performed during recording or playback.

4 Thumbnail menu button

In thumbnail display mode, use this button to access thumbnail menu functions to delete clips, for example.

◆ **NOTE**

Use the cursor, SET and EXIT/CANCEL buttons to select thumbnails and access menu functions.

For details, see [Manipulating Clips with Thumbnails] (page 106).

5 CURSOR and SET buttons

Use these buttons to manipulate setting menus, the menu bar and thumbnails.
The four triangular buttons are cursor buttons and the square center button is the SET button.

6 EXIT/CANCEL button

Press this button to exit an open thumbnail menu or property window to return to the previous image.
Pressing this button while holding down the SHIFT button turns it into a cancel function allowing you to cancel clip selections at one time.

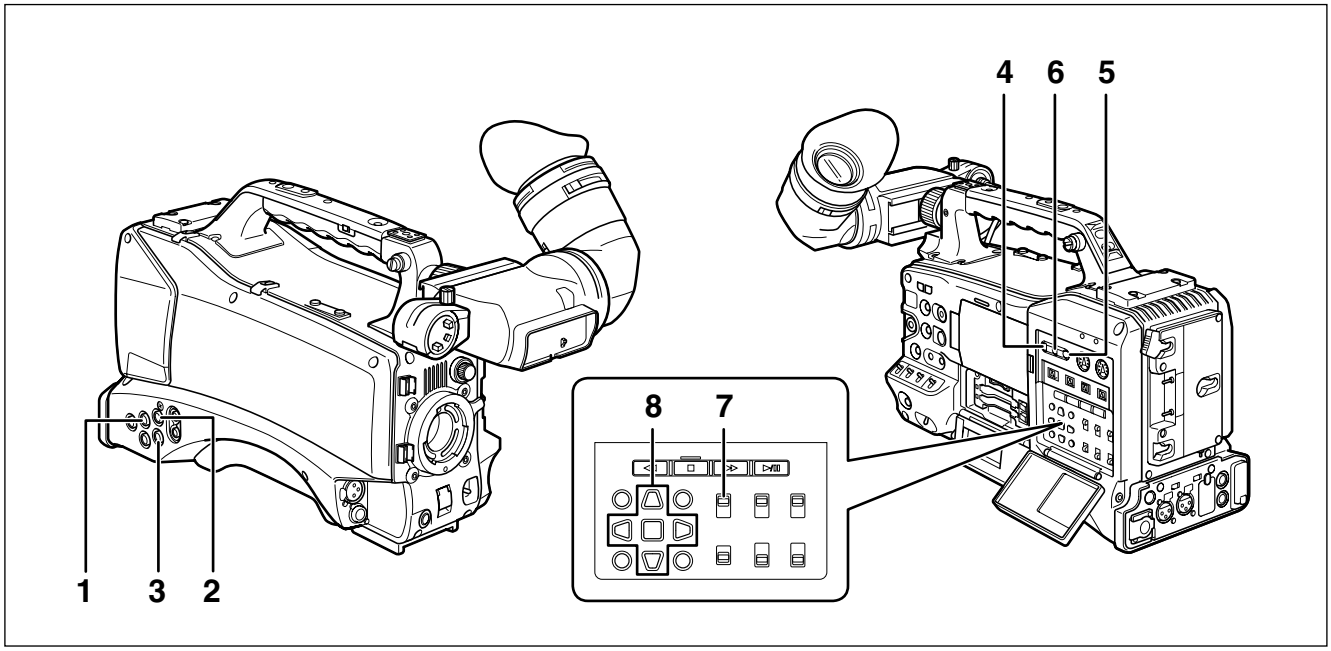
7 SHIFT button

Use this button together with other buttons.

- Hold down the SHIFT button and press the cursor button (△ ▽) in a thumbnail screen to move the pointer to the thumbnail at the beginning or end of a clip.
- Hold down the SHIFT button and press the SET button to select all clips from a previously selected clip to the clip at the cursor location.
- SHIFT button + EXIT/CANCEL button
  This button combination operates like the cancel function.

For details, refer to [6. EXIT/CANCEL button].
Operations while the SHIFT button is pressed are shown blow each button.

Time Code Section



1 GENLOCK IN connector (BNC)
Use this connector to input a reference signal to genlock the camera unit or externally lock the time code. The subcarrier of the VBS signal output by the VIDEO OUT connector of the camera cannot be externally locked.
For details, refer to [Externally Locking the Time Code] (page 67).

2 TC IN connector (BNC)
To externally lock the time code, input a reference time code to this connector.
For details, refer to [Externally Locking the Time Code] (page 67).

3 TC OUT connector (BNC)
Connect this connector to the time code input (TC IN) of the external device to lock the time code of that device to the time code of the AG-HPX301E.
For details, refer to [Outputting the time code externally] (page 68).

4 HOLD button
Pressing this button instantly freezes the time data indication on the counter. Note that time code generation continues. Pressing the button again restarts the counter.
This function allows you to check the time code or counter value of a recorded scene.

5 RESET button
Use this button to reset the counter value on the time code display to 0.
Pressing this button with the TCG switch positioned at [SET] when the TC PRESET screen and UB PRESET screen are open, resets all set values to 0. Use the Cursor SET button to PRESET.

6 COUNTER (counter display selector) button
Each press of the button displays the counter value, time code, user bit and frame rate data in the viewfinder and LCD display.

7 TCG (time code selector) switch
Use this switch to set the running mode of the built-in time code generator.

F-RUN: Select this position to continuously advance the time code independently of P2 card recording status. Use this position to synchronize the time code with the time of day, or to externally lock the time code.

SET: Select this position to set the time code or user bits.

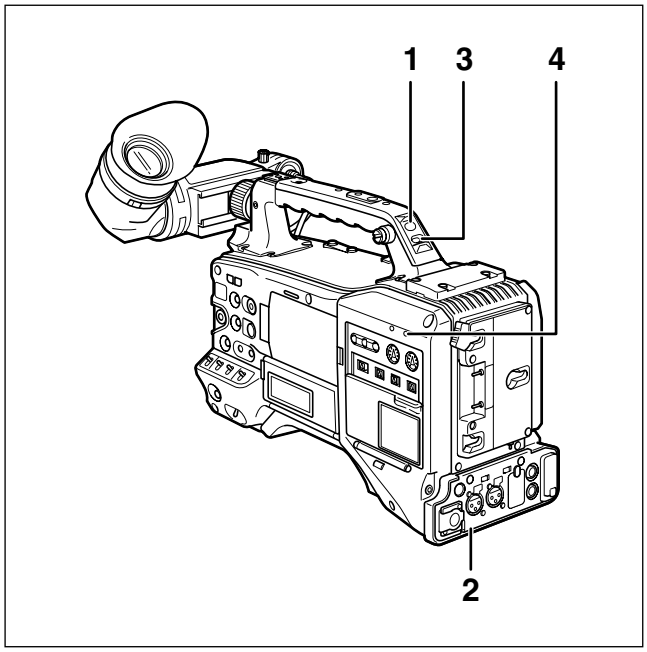
R-RUN: Select this position to advance the time code only during recording. The time code is continuously recorded during normal recording. But deleting clips and setting a 24P/24PA frame rate to continue recording of clips that are not 24P/24PA clips may break the sequence of time code recording.

◆ **NOTE**

Always use the CURSOR and SET buttons to set the time code and user bits. The JOG dial button cannot be used for this purpose.

8 CURSOR and SET buttons
Use these buttons to set the time code and user bits. The four triangular buttons are cursor buttons and the square center button is the SET button.
For details, refer to [Setting Time Data] (page 60).

Warning and Status Display Functions



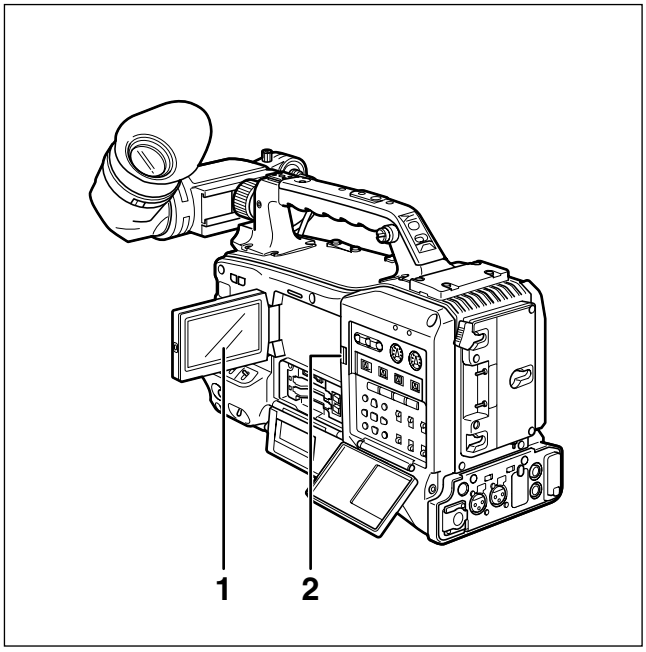
1 Back tally lamp
When the BACK TALLY switch is set to ON, this lamp behaves in the same way as the front tally lamp.

2 Rear tally lamp
When the BACK TALLY switch is set to ON, the rear tally lamp behaves in the same way as the back tally lamp.

3 BACK TALLY switch
Use this switch to control the back and rear tally lamps.
ON: Enables the back and rear tally lamps.
OFF: Disables the back and rear tally lamps.

4 WARNING lamp
This lamp starts blinking or lights when an error is detected in the memory card recorder unit.

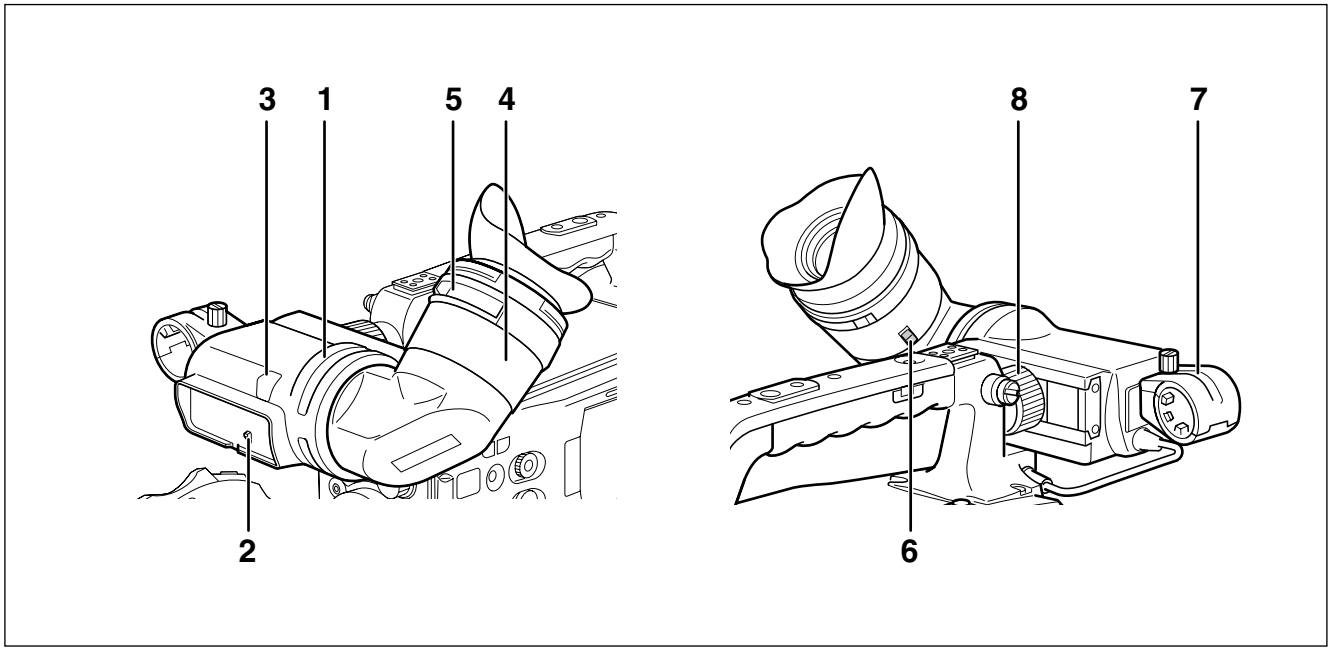
LCD Monitor



1 LCD Monitor
The LCD monitor displays the video in the viewfinder. Alternatively, it can show clips on the P2 card in a thumbnail format.
For details on the LCD monitor, refer to [Viewfinder and LCD Menus] (page 125).
In thumbnail display mode, you can use the thumbnail menu buttons, CURSOR and SET buttons to manipulate or delete clips, or format P2 cards.
For details, refer to [Manipulating Clips with Thumbnails] (page 106).

2 OPEN button
Use to open the LCD monitor.

Viewfinder



1 Viewfinder
The viewfinder displays the video image in color during recording or playback. It also displays warnings and messages – indicating camera operating status and settings – zebra patterns and markers (safety zone and center markers, etc.).

◆ **NOTE**

The menu option EVF COLOR can be set to monochrome in the DISPLAY SETUP screen.

2 TALLY switch
Use to control the front tally lamp.
ON: Tally lamp goes on.
OFF: Tally lamp goes out.

3 Front tally lamp
This lamp goes on during recording when the TALLY switch is set to the [ON] . It blinks to indicate warnings.

4 Eyepiece

5 Diopter adjusting ring
Adjust this ring to suit your vision so that the image in the viewfinder is as clear as possible.

6 Eyepiece lock button
For details, refer to [Detaching the eyepiece] (page 156).

7 Microphone holder

8 Right and left viewfinder positioning rings
Loosen the rings to adjust right and left position, and tighten the ring after completing the adjustment.

Chapter 3 Recording and Playback

Setting Date and Time of Internal Clock

The CLOCK SETTING value is recorded in the contents (clip), and affects the sequence of playback of the thumbnails. Before carrying out recording, be sure to check and set CLOCK SETTING and TIME ZONE.

■ This shows you how to adjust the calendar to 5:20 PM on April 1, 2009.

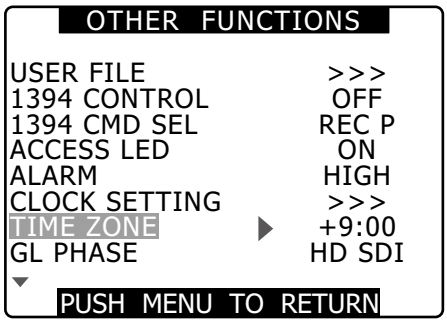
1 Set the POWER switch to ON.

2 Select TIME ZONE item in OTHER FUNCTIONS, then press the JOG dial button.

- For details on menu operation, refer to [Using the menus] (page 125).

3 Use the JOG dial button to set the time difference from Greenwich Mean Time.

- Check what time zone you are in and set accordingly.



■Time zone

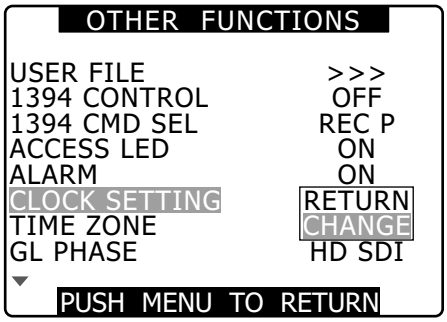
Time difference	Area	Time difference	Area
00:00	Greenwich	+01:00	Central Europe
-00:30		+01:30	
-01:00	Azores Islands	+02:00	Eastern Europe
-01:30		+02:30	
-02:00	Mid-Atlantic	+03:00	Moscow
-02:30		+03:30	Tehran
-03:00	Buenos Aires	+04:00	Abu Dhabi
-03:30	Newfoundland Island	+04:30	Kabul
-04:00	Halifax	+05:00	Islamabad
-04:30		+05:30	Bombay
-05:00	New York	+06:00	Dacca
-05:30		+06:30	Yangon
-06:00	Chicago	+07:00	Bangkok
-06:30		+07:30	
-07:00	Denver	+08:00	Beijing
-07:30		+08:30	
-08:00	Los Angeles	+09:00	Tokyo
-08:30		+09:30	Darwin
-09:00	Alaska	+10:00	Guam
-09:30	Marquesas Islands	+10:30	Lord Howe Island
-10:00	Hawaii	+11:00	Solomon Islands
-10:30		+11:30	Norfolk Island
-11:00	Midway Island	+12:00	New Zealand
-11:30		+12:45	Chatham Islands
-12:00	Kwajalein	+13:00	
+00:30			

◆ NOTE

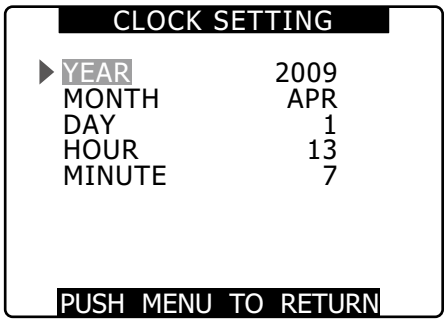
- **The clock is accurate to within about ±30 seconds a month with the power turned off.**
- **Check and set the time when accurate time is required. After setting the time, change the setting menu TIME ZONE item and the display and the recorded local time will be reset accordingly.**

4 Select CHANGE at the CLOCK SETTING item in OTHER FUNCTIONS, then press the JOG dial button.

• The CLOCK SET screen appears.



5 Turn the JOG dial button to select YEAR, then press the JOG dial button.



6 Turn the JOG dial button to set YEAR to 2009, then press the JOG dial button.

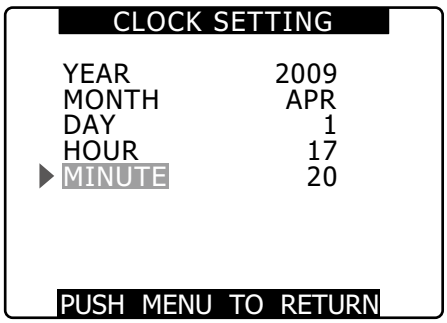
• A year between 2000 to 2037 can be set.

7 Turn the JOG dial button to select MONTH, then press the JOG dial button.

8 Turn the JOG dial button to set MONTH to APR, then press the JOG dial button.

9 Set DAY, HOUR and MINUTE in the same way as setting YEAR and MONTH.

• This is a 24-hour clock.



P2 Cards

Inserting P2 Cards

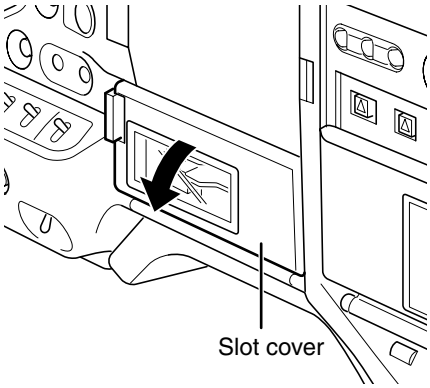
◆ **NOTE**

When using the camera recorder for the first time, be sure to set the time data beforehand.

For details, refer to [Setting Date and Time of Internal Clock] (page 26).

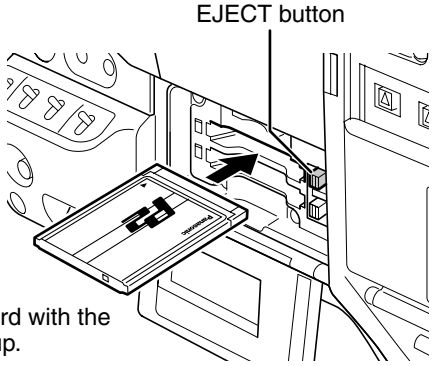
1 Turn on the POWER switch.

2 Open the card slot cover.



3 Insert a P2 card in a P2 card slot.

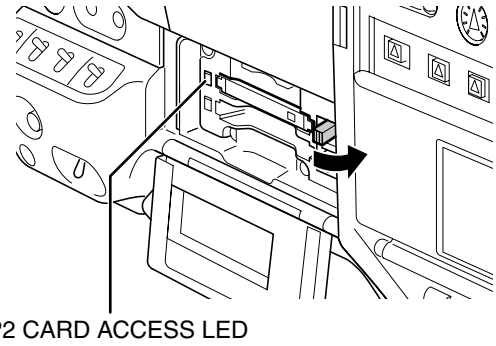
• Press in the card until the eject button pops up.



4 Push the eject button that pops up to the right.

• Insert a P2 card into the AG-HPX301E. The P2 CARD ACCESS LED for the appropriate slot indicates the status of the P2 card.

For details, refer to [P2 CARD ACCESS LED and status of P2 cards] (page 29).



5 Close the card slot cover.

◆ **NOTE**

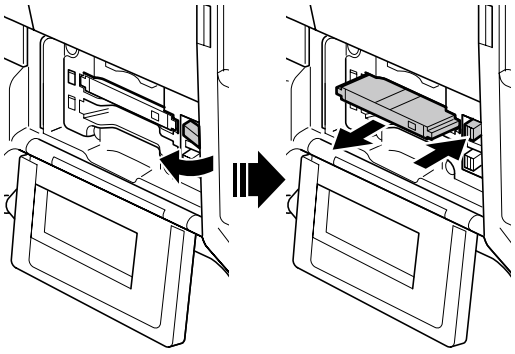
- **To prevent cards from falling out, dust from entering and reduce the risk of exposure to static electricity, close the card slot cover before moving the camera.**
- **Format P2 cards only on a P2 card device.**

Removing P2 Cards

1 Open the card slot cover.

2 Raise the eject button.

3 Then depress the eject button to release the P2 card.

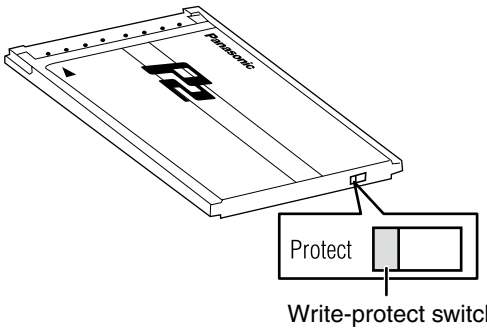


◆ NOTE

- **When a P2 card is being accessed or recognised after insertion (P2 CARD ACCESS LED blinks in orange), do not remove the P2 card. Removing a P2 card during access could damage it.**
- **If a P2 card being accessed is removed, the viewfinder displays "TURN POWER OFF" and the AG-HPX301E gives a warning using an alarm and the WARNING LED. In addition, all P2 CARD ACCESS LEDs blink rapidly in orange. If this is the case, turn the power off.**
  For details, refer to [Warning System] (page 157).
- **Removing a P2 card during access may corrupt clip data. Check the clips and restore them if required.**
  For details, refer to [Restoring Clips] (page 114).
- **If a P2 card being formatted is removed, it may be not be formatted properly. In this case, the viewfinder displays "TURN POWER OFF". If this message appears, turn off the power, then restart the AG-HPX301E to reformat the card.**
- **If a P2 card is inserted while another P2 card is being played back, the inserted P2 card is not recognised and the P2 CARD ACCESS LED for that card does not come on. Card recognition starts when playback ends.**
- **A P2 card inserted in an empty slot during recording may not be immediately recognized during the following events.**
  - **Immediately following PRE REC operation**
- **The CARD ACCESS LED can be set to stay off in the menu option ACCESS LED in the OTHER FUNCTIONS screen. When the camera is used in this way, remove cards when the camera has been powered down or a sufficiently long time after terminating recording, playback and other operating modes.**
- **Removing a P2 card during thumbnail display terminates the thumbnail display.**

To Prevent Accidental Erasure of P2 Card Content

To prevent the content of a P2 card being accidentally erased, position the write-protect switch on the P2 card at [Protect].



Write-protect switch

◆ NOTE

Write-protect switchover can be performed while the card is being accessed (during recording or playback), but does not take effect until access to the card ceases.

P2 CARD ACCESS LED and status of P2 cards

P2 CARD ACCESS LED	Status of P2 Card		MODE CHECK indication *1
Stays on in green	Recording enabled	Writing and reading enabled.	ACTIVE
Stays on in orange	Selected for recording	Writing and reading enabled for current recording mode (loop, interval or one-shot recording).	ACTIVE
Blinks in orange *2	Being accessed	Writing or reading being performed.	ACCESSING
Quickly blinks in orange	Being recognized	The P2 card is being recognised.	INFO READING
Blinks in green	Card full	The P2 card has no free space. Only reading is enabled.	FULL
	Write-protected	The write-protect switch on the P2 card is positioned at [PROTECT]. Only reading is enabled.	PROTECTED
Stays off	Card not supported	The card is not supported by your AG-HPX301E. Replace the card.	NOT SUPPORTED
	Incorrect format	The P2 card is not properly formatted. Reformat the card.	FORMAT ERROR
	Card not inserted	No P2 card is inserted. Card recognition standby.	NO CARD

*1 MODE CHECK appears in the viewfinder and on the LCD monitor.
For details, see [Viewfinder Screen Status Displays] (page 70).

*2 Blinks orange also when a PROXY card (optional accessory) is inserted in slot 2.

P2 card recording times

P2 cards available to the AG-HPX301E

This camera supports the following P2 cards.

- AJ-P2C004HG (4 GB)
- AJ-P2C008HG (8 GB)
- AJ-P2C016AG (16 GB)
- AJ-P2C016RG (16 GB)
- AJ-P2C032AG (32 GB)
- AJ-P2C032RG (32 GB)
- AJ-P2C064AG (64 GB)

◆ **NOTE**

- **Card model numbers and capacities above will become available as of January 2009. Greater capacities and technical innovation may extend the recording time.**
- **This unit cannot use AJ-P2C002SG (2 GB) cards.**
- **Use of cards other than those listed above may require updating the camera driver.**
  For details, refer to [Updating the firmware incorporated into the unit] (page 161).
- **For the latest information not available in the Operating Instructions, visit the P2 Support Desk at the following Web site.**
  https://eww.pavc.panasonic.co.jp/pro-av/

P2 card recording times

(When using one 64 GB card)

System mode	Recording format (codec)	Recording time
HD (1080i, 720P)	AVC-I 100 DVCPRO HD	Approx. 64 min.
	AVC-I 50	Approx. 128 min.
SD (576i, 480i)	DVCPRO50	Approx. 128 min.
	DVCPRO DV	Approx. 256 min.

◆ **NOTE**

- **The above recording time is for normal recording. Recording in native mode will extend recording time depending on system mode.**
  For details, refer to [List of recording formats and functions] (page 45).
- **Use of 32 GB, 16 GB and 8 GB P2 cards will provide 1/2, 1/4 and 1/8, respectively of above recording times.**
- **The indicated capacities include a management area so the total area available for recording is somewhat smaller.**

Splitting clips recorded on P2 cards

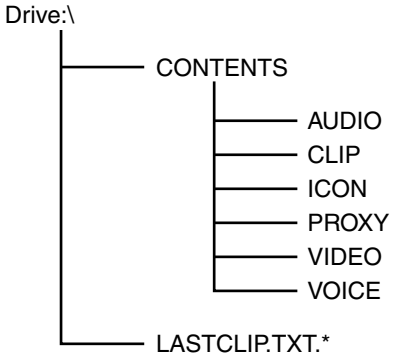
This camera will automatically generate additional clips for a continuous recording on an 8 GB or higher capacity P2 card when the recording exceeds the durations given below. Even so, a P2 device will handle such clips as a single clip in thumbnail operations (display, delete, recover, copy, etc.). Such recordings may be handled as separate clips by nonlinear editing software or a PC.

Recording format (excluding Native format)	Continuous recording time
AVC-I 100 DVCPRO HD	Approx. 5 min.
AVC-I 50 DVCPRO50	Approx. 10 min.
DVCPRO DV	Approx. 20 min.

Handling P2 Card Recording

The P2 card is a semiconductor memory card designed for the DVCPRO P2 series, Panasonic's line of professional video and broadcast equipment.

- Since the DVCPRO P2 format and AVC-Intra record data as files, it is ideally suited for computer processing. The file structure is in a proprietary format that includes audio and video data recorded in the MXF file format as well as various other essential data forming an interrelated folder structure as shown below.



All these folders are required.
* This file contains the last clip data recorded on a P2 device.

◆ **NOTE**

If any of this data is changed or lost, it will not be recognized as P2 data or the P2 card may no longer be possible to use in a P2 device.

- To prevent data loss in transferring P2 card data to a PC or write back PC data on a P2 card, use P2 Viewer, which can be downloaded from the Web site listed below. (Supported operating systems: Windows 2000, Windows XP, Windows Vista)

  https://eww.pavc.panasonic.co.jp/pro-av/support/desk/e/index.htm

- Follow the steps below to use general software such as Microsoft Windows Explorer or Apple Finder to transfer the data to a PC. Be sure to use P2 Viewer to write data back to a P2 card.
  - Treat the CONTENTS folder and the LASTCLIP.TXT file as a unit.
  - Do not modify the data below the CONTENTS folder.
  - In copying, be sure to copy both the CONTENTS folder and the LASTCLIP.TXT file together.
  - When transferring data from multiple P2 cards, create separate folders for each P2 card to prevent overwriting clips with identical names.
  - Do not delete data on a P2 card.
  - Format P2 cards only on a P2 card device.

Basic Procedures

This section describes the basic procedure for shooting and recording.
Before you embark on a shoot, pre-inspect your system to ensure that it works properly.
For directions on inspecting your memory card camera-recorder, see [Inspections Before Shooting] (page 153).

Battery Set-up to P2 card Insertion

1 Insert a charged battery.

2 Turn the POWER switch to ON to check the battery remaining level in the viewfinder.

- When battery capacity is low, replace it with a fully charged battery.

◆ **NOTE**

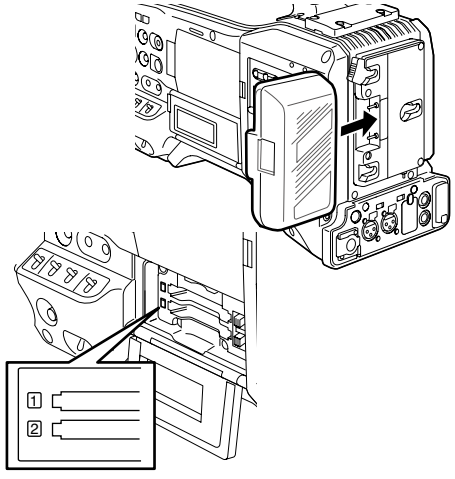
When low battery capacity is indicated after replacing a battery with a fully charged battery, check battery installation.
For details, refer to [BATTERY SETUP screen] (page 140).

3 Insert a P2 card, check that the P2 CARD ACCESS LED lights orange or green before closing the slot cover.

- When more than one P2 card slot contains a P2 card, the card in the slot with the lowest number is used first. However, regardless of slot number, a P2 card inserted later will not be accessed until the other cards have been used.

Example:

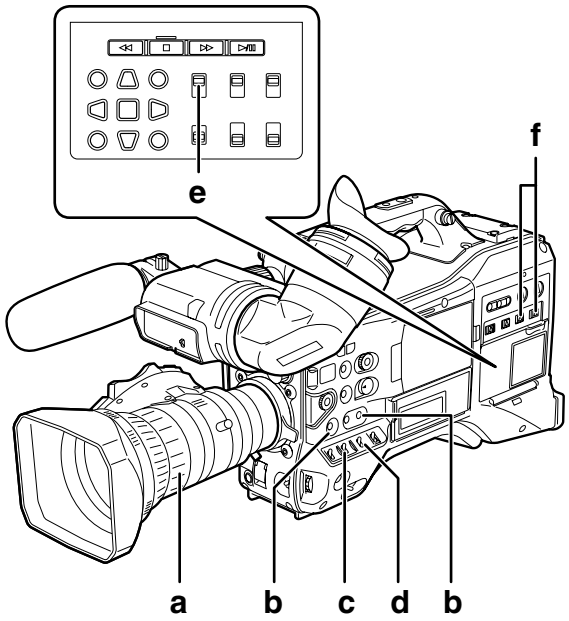
If the two slots contain P2 cards, the cards are used in order of slot numbers 1→2. However, if the P2 card in Slot 1 is removed and then re-inserted, the cards will be used in the following order: 2→1.



Note that the recording order is retained even if the power is turned off. When the power is next turned on, the last card written before powering-down will be the target card.

Setting the switches before shooting and recording

When a battery and P2 cards are installed, set the switches as detailed below, before starting to use your AG-HPX301E.



a Iris
The iris is automatically adjusted when the lens is set to the auto iris mode.

b USER MAIN/USER1/USER2
Assigning the SLOT SEL function to a USER button allows you to select one of the two inserted P2 cards for recording.
The P2 card selected for recording switches with each press of the USER button, and the P2 CARD ACCESS LED of the selected P2 card lights orange. The slot number of the card to be recorded appears in green in the LCD monitor and the viewfinder.
For more information on viewfinder displays, see [Viewfinder Screen Status Displays] (page 70).

◆ **NOTE**

- **The slot selected for recording cannot be changed when recording has started. Perform this operation during recording standby.**
- **Use the USER MAIN/USER1/USER2 item in setting menu SW MODE screen to assign functions to the USER MAIN/USER1/USER2 button.**

c GAIN switch
Normally, this should be set to L (0 dB). If conditions are too dark, an appropriate gain level should be set.

d AUTO KNEE selector switch
Set to ON or OFF. Selecting BARS turns off this function and outputs a color bar signal.

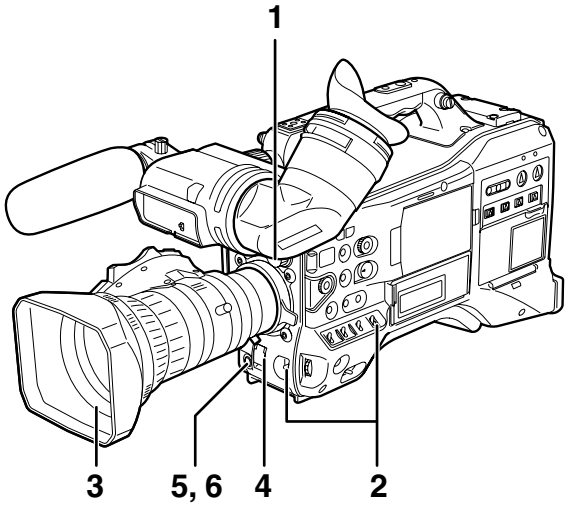
e TCG
Set to F-RUN or R-RUN.

f AUDIO SELECT CH 1/CH 2
Set to AUTO.

Shooting

White/Black Balance Adjustment to Recording Completion

For shooting, follow the steps below.



1 Use the ND FILTER control to select a filter according to ambient light conditions.

2

■When the white balance is saved:

- Position the WHITE BAL switch to [A] or [B].

■When the white or black balance is not saved and you have no time to adjust the white balance:

- Position the WHITE BAL switch to [PRST].
- The color temperature can be set to 3200K or 5600K.

■If the white balance is adjusted on the spot:

- Select a filter according to ambient light conditions. Then, position the WHITE BAL switch to [A] or [B] and shoot a white test subject so that it appears at the center of the screen. Then, follow the steps below to adjust the white balance.

1. Turn the AUTO W/B BAL switch toward [AWB] to adjust the white balance.
2. Turn the AUTO W/B BAL switch toward [ABB] to adjust the black balance.
3. Turn the AUTO W/B BAL switch toward [AWB] to adjust the white balance again.

For directions on making adjustments, see [Adjusting the White Balance] (page 51) and [Adjusting the Black Balance] (page 52).

3 Point the camera at your subject to adjust the focus, and zoom.

4 To use the electronic shutter, set the shutter speed and shutter mode.

For more information, see [Setting the Electronic Shutter] (page 54).

5 Press the REC button to start recording.

6 To stop recording, press the REC button.

◆ **NOTE**

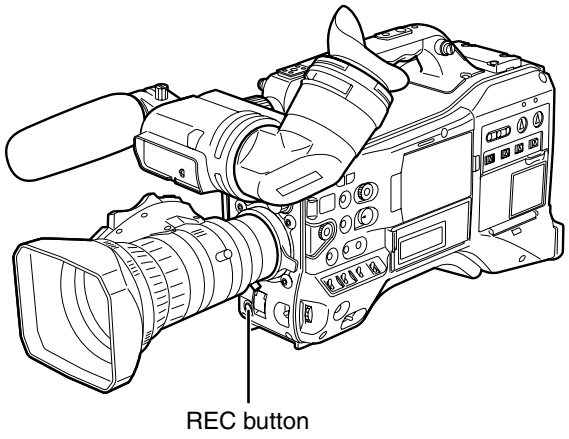
• Shooting the sun and other very bright subjects may produce a color cast in surrounding areas.

■Operation Buttons

During recording, all operation buttons (REW, FF, PLAY/PAUSE, STOP) are disabled.

Normal Recording

- Pressing the REC button starts recording of video and sound on the P2 card.
- The video and audio (including additional information) recorded in one session is referred to as a clip.



◆ **NOTE**

Pressing the REC button will not immediately stop data write operations to a P2 card in the following situations. And the REC button operation is not recognized.

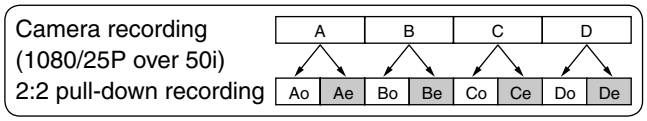
- **When terminating a short recording**
- **When terminating a recording that has just continued onto a second P2 card**

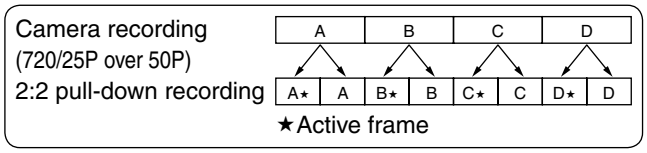
Standard and Native Recording

This camera is capable both of native recording, when it records video data at the frame rate used by the camera, and is also capable of standard recording or recording 50 (59.94) frames with a pulldown.

Standard recording (pull-down recording)

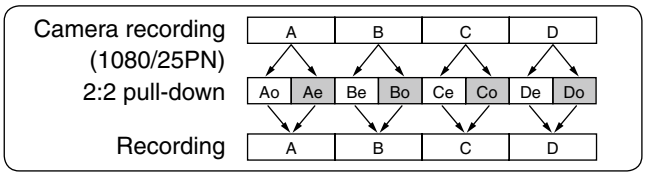
Video shot in the 25P mode will be recorded as 50i or 50P, with 2:2 pulldown.
Also, video shot in the 24P mode and in the 30P mode are recorded as 59.94i or 59.94P, with 2:3 pulldown and 2:2 pulldown, respectively.
The camera can also handle video shot in the 24PA mode (2:3:3:2 advanced pulldown).
Note that AVC-Intra does not support pulldown recording.

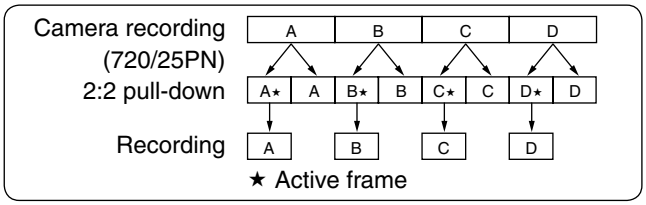




Native recording

Native recording extracts only the active frames during 1080i AVC-Intra recording as well as 720P DVCPRO HD and AVC-Intra recording.
When SYSTEM MODE is set to 720-50P, this lengthens the recording time maximum 2 times at 25PN. When SYSTEM MODE is set to 720-59.94P, this lengthens the recording time maximum 2.5 times at 24PN, and maximum 2 times at 30PN.
Also in native recording, the output of camera video and playback video is a 50 (59.94) frame rate.





◆ **NOTE**

- **In 24P/24PA, 24PN (native recording) and in 25PN/30PN (native recording) at 720P, the camera starts recording in 5-frame, 4-frame and 2-frame segments, respectively. For this reason, to continue recording clips in a system mode using a different recording segmentation may break the continuity of the time code.**
- **The camera uses internal memory for recording, when recording starts as soon as a P2 card is inserted or the camera is powered up. In this situation, recording cannot be stopped until P2 card recognition ends.**
  To check P2 card status, press the DISP/MODE CHK button and check the row for SLOT 1 and 2.
- **An editing system that supports 24PA (2:3:3:2 advanced pulldown) will enable editing with less quality loss than 24P (2:3 pulldown).**
- **Record at standard 24P if a 24PA compatible editing system will not be used.**

Variable Frame Rate (VFR) Recording

In 720P mode, this camera is capable of frame skipping (undercranking) and high-speed (overcranking) recording. The camera operator can select between native (PN) recording mode and standard (OVER) recording.

Native VFR Recording

1 In the SYSTEM SETUP screen, set the menu option SYSTEM MODE to 720-50P (720-59.94P) and the menu option REC FORMAT to AVC-I 100/25PN (30PN, 24PN).

2 In the SCENE FILE screen, set the menu option VFR to ON and the menu option FRAME RATE to suit shooting purposes.

- The frame rate can be set to a value beteween 12 frames (12P) to 50 frames (50P) when system mode is set to 720-50P, and to a value beteween 12 frames (12P) to 60 frames (60P) when system mode is set to 720-59.94P.

◆ **NOTE**

Pressing the SYNCHRO SCAN switch while the JOG dial button is held down and the frame rate indication is blinking allows you to change the frame rate as long as recording is not in progress.

3 Press the REC button.

This starts recording in the VFR mode (native VFR).

This mode can be combined with the AVC-I 100, AVC-I 50, DVCPRO HD, 25PN (30PN, 24PN) recording formats.
For details, refer to [List of recording, playback and output formats] (page 48).
For details, refer to [SYSTEM SETUP screen] (page 131).

◆ **NOTE**

Note the following about native VFR recording.

- **The P2 card that is being recorded cannot be changed during recording.**
- **Pre-recording, loop recording, interval recording and one-shot recording are not available.**
- **1394 output is not available during recording and recording standby.**
- **Changing Scene Dial position during recording does not change VFR on and off position.**
- **Sound cannot be recorded.** *1
- **The time code is locked to Rec Run.** *1
- **Thumbnail screens are created 1 frame later than video recorded on a P2 card, but this is not a malfunction.**

*1 In 25PN (30PN, 24PN) recording modes, when the frame rate is 25 (30, 24) frames per second, respectively, audio can also be recorded. The time code can be set to Free Run (F-RUN).

Standard VFR recording (pulldown recording)

1 In the SYSTEM SETUP screen, set the menu option SYSTEM MODE to 720-50P (720-59.94P) and the menu option REC FORMAT to AVC-I 100/50P (60P).

2 In the SCENE FILE screen, set the menu option VFR to ON and the menu option FRAME RATE to suit shooting purposes.

- The frame rate can be set to a value beteween 12 frames (12P) to 50 frames (50P) when system mode is set to 720-50P, and to a value beteween 12 frames (12P) to 60 frames (60P) when system mode is set to 720-59.94P.

◆ **NOTE**

Pressing the SYNCHRO SCAN switch while the JOG dial button is held down and the frame rate indication is blinking allows you to change the frame rate without opening a setting menu as long as recording is not in progress.

3 Press the REC button.

This starts recording in the VFR mode (OVER 50P (60P)).

This mode can be combined with the AVC-I 100/50P (60P), AVC-I 50/50P (60P) and DVCPRO HD/50P (60P) recording formats.
For details, refer to [List of recording, playback and output formats] (page 48).
For details, refer to [SYSTEM SETUP screen] (page 131).

Setting a low frame rate and recording a fast-moving subject at 50P (60P) will produce a smoothly flowing sequence at playback.

◆ **NOTE**

- **Audio playback is disabled when a frame rate converter is used to extract active frames for over and under-cranking.**
- **Note the following about standard VFR recording.**
  - **The P2 card that is being recorded cannot be changed during recording.**
  - **Pre-recording, loop recording, interval recording and one-shot recording are not available.**
  - **1394 output is available during recording and recording standby, but not in AVC Intra mode.**
  - **Changing Scene Dial position during recording does not change VFR on and off position.**
  - **Sound is recorded.**

Using VFR Recording Function

Standard speed for film production (only when SYSTEM MODE is set to 720-59.94P, 1080-59.94i)

Screen production normally requires a 24 fps (24 frames per second) frame rate (normal speed) for screening a film. Making the settings described below will provide film-quality playback. The 720P progressive mode and cine-like gamma will make video look like it was shot with a film camera.

Standard settings for film production

SYSTEM MODE settings			Recording frame rate
SYSTEM MODE	Other settings		
720 - 59.94P	REC FORMAT	AVC-I 100/24PN (AVC-I 50/24PN) (DVCPRO HD/24PN)	24 frames
	VFR	OFF	
1080 - 59.94i	REC FORMAT	AVC-I 100/24PN (AVC-I 50/24PN) (DVCPRO HD/60i)	
	CAMERA MODE *1	24P	

*1 Only when the menu option REC FORMAT is set to DVCPRO HD/60i in the SYSTEM SETUP screen.

Shooting at standard speed for producing commercials and TV programs

Production aimed at HDTV and SDTV broadcasts for TV audiences must use the frame rate (x1) of 25fps (25 frames/s), 30fps (30 frames/s). The settings below allow you to obtain the kind of playback used for broadcast programs. This permits film-like video recording of commercials and music clips that also provide a frame rate suitable for broadcasting.

Standard settings for producing commercials and dramas

SYETEM MODE settings			Recording frame rate
SYSTEM MODE	Other settings		
720-50P	REC FORMAT	AVC-I 100/25PN (AVC-I 50/25PN) (DVCPROHD/25PN)	25 frames
	VFR	OFF	
1080-50i	REC FORMAT	AVC-I 100/25PN (AVC-I 50/25PN) (DVCPROHD/50i)	
	CAMERA MODE *2	25P	
720-59.94P	REC FORMAT	AVC-I 100/30PN (AVC-I 50/30PN) (DVCPROHD/30PN)	30 frames
	VFR	OFF	
1080-59.94i	REC FORMAT	AVC-I 100/30PN (AVC-I 50/30PN) (DVCPROHD/60i)	
	CAMERA MODE *2	30P	

*2 Only when the menu option REC FORMAT is set to DVCPRO HD/50i (60i) in the SYSTEM SETUP screen.

Undercranking effects

This effect produces the quick motion often used for showing clouds drifting across the sky, crowds of people swarming past a solitary standing individual, a kung fu demonstration and other performances. For example, selecting a VFR recording frame rate of 12 fps when shooting at a 25P recording format yields a fast-motion effect of approx. 2x normal speed. The same effect can be obtained at a 24P recording and a 30P recording.

Standard setup for undercranking effects

SYETEM MODE settings			Recording frame rate
SYSTEM MODE	Other settings		
720-50P	REC FORMAT	AVC-I 100/25PN (AVC-I 50/25PN) (DVCPROHD/25PN)	12 to 24 frames
	VFR	ON	
	FRAME RATE	Set to 24FRAME or lower	

- With the menu option REC FORMAT set to DVCPRO HD/50P (60P), you can use a nonlinear editing system to generate quick motion effects from the resulting footage.

Overcranking effects

Overcranking produces slow-motion playback, which is frequently used in climax scenes, or for dramatic effects like car chases and action scenes. For example, selecting a recording frame rate of 50 fps when shooting a 25P recording format yields a slow-motion effect that is 2 times normal speed. Shooting 720P progressive video will produce smooth and high-quality slow-motion. The same effect can be obtained at a 24P recording and a 30P recording.

Standard setup for overcranking effects

SYSTEM MODE setup			Recording frame rate
SYSTEM MODE	Other settings		
720-50P	REC FORMAT	AVC-I 100/25PN (AVC-I 50/25PN) (DVCPRO HD/25PN)	26 to 50 frames
	VFR	ON	
	FRAME RATE	Set to 26 frames or more	

- With the menu option REC FORMAT set to DVCPRO HD/50P, you can use a nonlinear editing system to generate slow motion effects from the resulting footage.

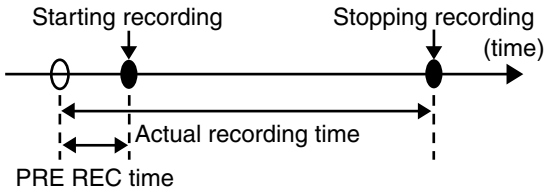
Special Recording Modes

During P2 card recording, setting items in the menu option RECORDING SETUP screen provides the following special recording modes: pre-recording, interval recording, one-shot recording, and loop recording.
These recording modes are available only with the following settings.

SYSTEM MODE	REC FORMAT	Other conditions
1080-59.94i	DVCPROHD/60i AVC-I 100/60i AVC-I 50/60i	Set CAMERA MODE to 60i or 30P
1080-50i	DVCPROHD/50i AVC-I 100/50i AVC-I 50/50i	
720-59.94P	DVCPROHD/60P AVC-I 100/60P AVC-I 50/60P	Turn VFR OFF
720-50P	DVCPROHD/50P AVC-I 100/50P AVC-I 50/50P	Turn VFR OFF
480-59.94i	DVCPRO 50/60i DVCPRO/60i DV/60i	Set CAMERA MODE to 60i or 30P
576-50i	DVCPRO 50/50i DVCPRO/50i DV/50i	

Pre-recording (PRE REC)

This function is used to start recording a certain number of seconds (approx. 3 seconds for HD recordings or approx. 7 seconds for SD recordings) before actual recording starts.



1 Check that the SYSTEM SETUP screen is set up as described above.

For details on menu operation, refer to [Using the menus] (page 125).

2 Set the menu option PREREC MODE to ON in the RECORDING SETUP screen.

- The following indications appear in the special recording display area in the viewfinder.
  Recording: P-REC lights
  Pause: P-PAUSE lights
  For details, refer to [Screen displays] (page 71).

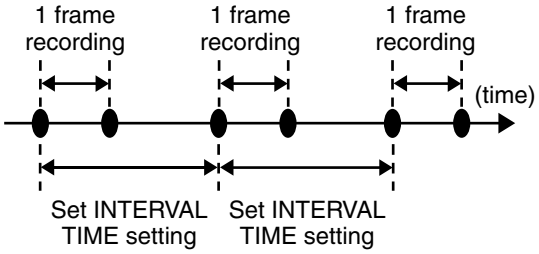
3 Press the REC button.

This setting will record audio and video a time period prior to start of recording.

- The following recording modes will disable the pre-recording function and start respective recording function when selected.
  - Recording of video input via the IEEE1394 connector
  - When changing recording formats
  - After a change from playback to recording
  - During interval recording
  - During one-shot recording
  - During loop recording
- There may be a short delay in start of audio and video recording when the REC button is pressed directly after switching from thumbnail display or playback to view what you are shooting, after turning the power on and after changing the PREREC MODE.

Interval recording (INTERVAL REC)

This function is used to record 1 frame at the time interval set in the INTERVAL TIME item.



1 Check that the SYSTEM SETUP screen is set up as described on page 39.

For details on menu operation, refer to [Using the menus] (page 125).

2 Select INTERVAL in the menu option REC FUNCTION in the RECORDING SETUP screen.

3 Set the time in the menu option INTERVAL TIME in the RECORDING SETUP screen.

4 Press the REC button.

- The camera will repeat 1-frame recording for the time interval set in the INTERVAL TIME option.
- Press the STOP button to stop recording.
- To cancel this function, turn the camera off or select NORMAL in the REC FUNCTION option.
- The following indications appear to the left of the operation status display.
  - During recording: “I-REC” stays lit.
  - During a pause: “I-PAUSE” stays lit. When a setting of less than 2 seconds is made in step 3, “I-REC” blinks according to time setting during recording.
  - When stopped: “I-” in “I-PAUSE” blinks.

◆ **NOTE**

- **The pre-recording function is not available.**
- **Sound is not recorded.**
- **Data recorded (until the STOP button is pressed) in this mode is recorded as a single file.**
- **There is no output from the DVCPRO/DV connector.**

One-shot recording (ONE SHOT REC)

This function records a single shot at each unit of time which has been set.

1 Check that the SYSTEM SETUP screen is set up as described on page 39.

For details on menu operation, refer to [Using the menus] (page 125).

2 Select ONE SHOT in the menu option REC FUNCTION in the RECORDING SETUP screen.

3 Set the time in the menu option ONE SHOT TIME in the RECORDING SETUP screen.

4 Press the REC button.

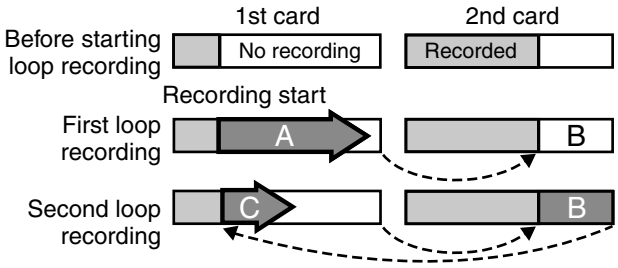
- The camera will pause recording after making a recording that lasts the duration set in step 3.
- Press the STOP button to stop recording.
- To cancel this function, turn the camera off or select NORMAL in the REC FUNCTION option.
- The following indications appear to the left of the operation status display.
  - During recording: “I-REC” stays lit.
  - During a pause: “I-PAUSE” stays lit.
  - When stopped: ”I-“ in “I-PAUSE” blinks.

◆ **NOTE**

- **No other functions are available during operation.**
- **The pre-recording function is not available.**
- **Sound is not recorded.**
- **Data recorded (until the STOP button is pressed) in this mode is recorded as a single file.**
- **There is no output from the DVCPRO/DV connector.**
- **During continuous one-shot recording, recording operation speed may be decreased.**

Loop recording (LOOP REC)

- When two P2 cards are inserted in the P2 card slots, each card is recorded in succession.
- When there is no longer any space left on the cards, recording starts over from the first card by recording new clips over saved old clips.
  For the clip recording time, see [Splitting clips recorded on P2 cards] (page 30).



Recording will be made on the areas with no recording consecutively (A, B, then C). When all areas on all cards are recorded, new recording (C) will be made by overwriting the area A.

1 Check that the SYSTEM SETUP screen is set up as described on page 39.

For details on menu operation, refer to [Using the menus] (page 125).

2 Select LOOP in the menu option REC FUNCTION in the RECORDING SETUP screen.

3 Press the REC button.

- Recording starts.
- Press the REC button to stop recording.
- To cancel this function, turn the camera off or select NORMAL in the REC FUNCTION item.
- The following indications appear to the left of the operation status display.
  - During recording: “L-REC” stays lit.
  - During a pause: “L-PAUSE” stays lit.
  - When remaining memory is low: “P2 LACK L-” blinks.

◆ **NOTE**

- **Use two P2 cards with at least one minute of remaining recording time.**
- **The mode check screen shows standard recording time depending on recording format as remaining P2 card time. When loop recording is stopped right after deleting old data, the time of recordings on the card may be shorter than indicated.**
- **This function is not available during IEEE1394 input.**
- **The pre-recording function is not available.**
- **Canceling this function may take some time. The succeeding operations are not available until the P2 CARD ACCESS LED goes from blinking to steady lighting.**
- **During loop recording, the access LEDs for all P2 cards used in the recording light orange or blinks. Note that removing any of the P2 cards will terminate loop recording.**
- **Irregularity in the input GENLOCK reference signal during loop recording may terminate recording.**

PROXY Recording Function (Optional)

Installing an optional video encoder card (AJ-YAX800G) in P2 card slot 2 makes it possible to record MPEG4 format video, time code data and other real-time data to P2 cards or SD memory cards simultaneous with camera recording of video and audio.

◆ **NOTE**

Insert the video encoder card when the camera is turned off.

For details, refer to the supplied User’s Guide of the video encoder card.

Hot Swap Recording

With a P2 card in each card slot it is possible to make one continuous recording that spans two cards. And by removing any card other than that being recorded, you can make continuous recording on 2 or more cards (hot swap recording).
Note that recognition of a P2 card may be delayed depending on when it is inserted in an empty card slot (for example, immediately after pre-recording or when a recording continues from one card to the next). P2 cards should be inserted when there is still 1 minute or more time left on the card that is being recorded.

◆ **NOTE**

This function is not compatible with hot-swap playback.

REC REVIEW Function

- Pressing the RET button on the lens after a recording will automatically locate and play back the last two seconds of the most recent clip. Holding down the RET button on the lens will allow you to play back up to 10 seconds. Use this function to check that recording is performed normally. The camera returns to recording standby mode after playback. If the clip is short, holding down the RET button after a return to the beginning of the clip will not result in playback of the clip before the current clip.
- You can use menu options USER MAIN, USER1 and USER2 to assign the REC REVIEW function to a user button. Select these options from the SW MODE screen.

◆ **NOTE**

Note that a backup recording performed on a backup device connected to the DVCPRO/DV or SDI OUT connector will also record video played back using the REC REVIEW function.

Shot Marker (SHOT MARK) Recording Function

This function can be used to distinguish a clip from other clips by adding a thumbnail to each clip.
This also makes possible to display or play back the marked clips only.

To add shot marks

1 In the SW MODE screen, assign SHOT MARK to a user button (USER MAIN, USER1 or USER2) or the RET button on the lens.

For details on menu operation, refer to [Using the menus] (page 125).

2 Press the user button (or the RET button on the lens) to which SHOT MARK has been assigned during recording or when recording is paused.

- SHOT MARK ON is displayed as a shot mark is inserted in the currently recorded clip.
- Pressing this key a second time displays SHOT MARK OFF and the shot mark is deleted.

◆ **NOTE**

- **A shot mark added during a pause after recording is added to the most recently recorded clip.**
- **Shot marks can be added also in the thumbnail display.**
- **The shot mark function is not available during loop recording, interval recording and one-shot recording. When this function is not available, pressing this button displays SHOT MARK INVALID.**
- **Shot marks can be set or cancelled in playback pause mode but not during playback.**
- **Shot marks cannot be set or deleted for video data created in a single hot-swap recording session consisting of multiple clips unless all the P2 cards that contain the video data for the entire session are inserted. In clips that consist of multiple clips like the one above, shot marks can be added only to the first clip of video data.**

Text Memo Recording Function

Use this function to add text memos anywhere in the video during clip recording or playback.
This makes it possible to display thumbnails only of clips with text memos, or to display thumbnails and time codes of text memo positions in order, to play back clips from text memo points and select and copy only the sections you want.
For details, refer to [Text Memo] (page 112).

To add text memos

1 In the SW MODE screen, assign TEXT MEMO to a user button (USER MAIN, USER1 or USER2) or the RET button on the lens.

For details on menu operation, refer to [Using the menus] (page 125).

2 Press the user button (or the RET button on the lens) to which TEXT MEMO has been assigned during recording or playback.

- "TEXT MEMO" is displayed and a text memo is inserted at the point the button is pressed.

◆ **NOTE**

- **You can insert up to 100 text memos per clip.**
- **Text memos cannot be added during loop recording, interval recording and one-shot recording. When this function is not available, pressing this button displays TEXT MEMO INVALID.**

Normal and Variable Speed Playback

■Normal speed playback

Press the PLAY/PAUSE button to view playback in the viewfinder and on the LCD monitor in color. Connecting a color video monitor to the VIDEO OUT connector or SDI OUT connector will enable playback of color video.
The PLAY/PAUSE button can be used to pause playback.

■Fast-forward/fast-reverse playback

The FF and REW buttons provide 32× and 4× fast playbacks and fast reverse playbacks. In stop mode, this function will play back video at 32× speed and in playback mode, it will play back video at 4× speed.

■Clip cue up

When playback is paused, the FF button locates the beginning of the next clip while staying in pause mode.
When playback is paused, the REW button locates the beginning of the current clip while staying in pause mode.

◆ NOTE

- **It may take some time to load clip data if playback is started or a thumbnail screen is opened right after removing or inserting a P2 card or turning the power on. The thumbnail screen displays UPDATING at such times.**
- **If a P2 card is inserted while another P2 card is being played back, the clips on the inserted P2 card will not be played back. A P2 card inserted during playback will be recognised after playback ends.**
- **If you perform variable speed playback on a clip split across more than one P2 card, sound may disappear for a moment. This is not a malfunction.**
- **To play back a clip in a different SYSTEM MODE, adjust the SYSTEM MODE to the clip to reset the camera before playback.**
- **Playback of the audio channels CH5 to CH8 recorded on another device is not possible.**

Chapter 4 Adjustments and Settings for Recording

Selecting recording signals

This camera records HD (1080i, 720P) signals using AVC-Intra or DVCPRO HD codecs and use a combination of DVCPRO50, DVCPRO or DV codecs for recording SD (576i (480i)) signals.
It provides a variety of capture frame rates and recording frame rates (native recording) to suit specific applications.
Select recording and recording signal in the setting menus listed below.

Screen	Setting menu	Setting
SYSTEM SETUP screen	SYSTEM MODE	Selects the 1080i, 720P or 576i (480i) signal format. To change this setting, wait until TURN POWER OFF appears before turning the power off and then turn it back on again.
	REC SIGNAL	Selects to record using this camera or from the DVCPRO/DV connector.
	REC FORMAT	Selects AVC-Intra or DVCPRO HD codec and 50i (60i), 50P (60P), 25PN (30PN, 24PN) native recording in HD mode. Selects DVCPRO50, DVCPRO or DV codec in SD mode.
	CAMERA MODE	Selects 50i (60i), 25P (30P, 24P or 24PA) pulldown recording in 1080i or 576i (480i) mode.
	ASPECT CONV	Selects the video aspect ratio for recording and output in SD mode (576i (480i)).
SCENE FILE screen	VFR	Setting this function to ON in 720P mode starts variable frame rate capture which records at the frame rate set in the FRAME RATE option. For details, refer to [Variable Frame Rate (VFR) Recording] (page 36).
	FRAME RATE	When the VFR option is set to ON, select the frame rate for variable frame rate recording.

◆ **NOTE**

- **Changing the menu options SYSTEM MODE, REC SIGNAL, REC FORMAT and CAMERA MODE may distort video and audio, but this is not a malfunction.**

List of recording formats and functions

The table below lists the recording formats and recording functions that the camera supports.

Camera recording modes

■When SYSTEM MODE is set to 1080-50i, 720-50P, 576-50i

Setting					Recording format *1		Recording time *2	Recording function			
SYSTEM MODE	REC FORMAT	CAMERA MODE	VFR	FRAME RATE [FRAME]				PRE REC	PROXY (optional)	INTERVAL, ONE SHOT	LOOP REC
1080-50i	AVC-I 100/50i (AVC-I 50/50i)	Disabled	Disabled	Disabled	1080/50i	AVC-I 100 (AVC-I 50)	Approx. 64 min. (Approx. 128 min.)	○	○	○	○
	AVC-I 100/25PN (AVC-I 50/25PN)				1080/25PN Native			–	–	–	–
	DVCPRO HD/50i	50i			1080/50i	DVCPRO HD	Approx. 64 min.	○	○	○	○
		25P			1080/25P Over50i 2:2 Pull Down			○	○	○	○
720-50P	AVC-I 100/50P (AVC-I 50/50P)	Disabled	OFF	Disabled	720/50P	AVC-I 100 (AVC-I 50)	Approx. 64 min. (Approx. 128 min.)	○	○	○	○
			ON	12~50	720/50P			–	–	–	–
	AVC-I 100/25PN (AVC-I 50/25PN)		OFF	Disabled	720/25PN Native		Approx. 128 min. (Approx. 256 min.)	–	–	–	–
			ON	25				–	–	–	–
				Other than 25	720/25PN Native VFR (Audio cannot be recorded)			–	–	–	–
	DVCPRO HD/50P		OFF	Disabled	720/50P	DVCPRO HD	Approx. 64 min.	○	○	○	○
			ON	50	720/50P			–	–	–	–
				25	720/25P Over50P 2:2 Pull Down			–	–	–	–
				Other than above	720/50P VFR			–	–	–	–
	DVCPRO HD/25PN		OFF	Disabled	720/25PN Native		Approx. 128 min.	–	–	–	–
			ON	25				–	–	–	–
				Other than 25	720/25PN Native VFR (Audio cannot be recorded)			–	–	–	–
576-50i	DVCPRO 50/50i DVCPRO/50i DV/50i	50i	Disabled	Disabled	576/50i	DVCPRO50 DVCPRO *3 DV *4	Approx. 128 min. Approx. 256 min. *3 Approx. 256 min. *4	○	○	○	○
		25P			576/25P Over50i 2:2 Pull Down			○	○	○	○

*1 Native mode records active frames only.

*2 Recording times are indicated for a single 64 GB P2 card. Two cards double the recording time.
Since native VFR mode records only active frames, the recording time and actual shooting time differ.
Example: In 25PN recording, shooting at a frame rate of 50 frames will result in a shooting time of 25/50 (0.5 times).
In 25PN recording, shooting at a frame rate of 12 frames will result in a shooting time of 25/12 (approx. 2 times).

*3 For DVCPRO/50i

*4 For DV/50i

■**When SYSTEM MODE is set to 1080-59.94i, 720-59.94P, 480-59.94i**

Setting					Recording format *1		Recording time *2	Recording function			
SYSTEM MODE	REC FORMAT	CAMERA MODE	VFR	FRAME RATE [FRAME]				PRE REC	PROXY (optional)	INTERVAL, ONE SHOT	LOOP REC
1080-59.94i	AVC-I 100/60i (AVC-I 50/60i)	Disabled	Disabled	Disabled	1080/60i	AVC-I 100 (AVC-I 50)	Approx. 64 min. (Approx. 128 min.)	○	○	○	○
	AVC-I 100/30PN (AVC-I 50/30PN)				1080/30PN Native			–	–	–	–
	AVC-I 100/24PN (AVC-I 50/24PN)				1080/24PN Native		Approx. 80 min. (Approx. 160 min.)	–	–	–	–
	DVCPRO HD/60i	60i	Disabled		1080/60i	DVCPRO HD	Approx. 64 min.	○	○	○	○
		30P			1080/30P Over60i 2:2 Pull Down			○	○	○	○
		24P			1080/24P Over60i 2:3 Pull Down			–	–	–	–
		24PA			1080/24PA Over60i 2:3:3:2 Pull Down			–	–	–	–
720-59.94P	AVC-I 100/60P (AVC-I 50/60P)	Disabled	OFF	Disabled	720/60P	AVC-I 100 (AVC-I 50)	Approx. 64 min. (Approx. 128 min.)	○	○	○	○
			ON	12-60				–	–	–	–
	AVC-I 100/30PN (AVC-I 50/30PN)		OFF	Disabled	720/30PN Native		Approx. 128 min. (Approx. 256 min.)	–	–	–	–
			ON	30				–	–	–	–
				Other than 30	720/30PN Native VFR (Audio cannot be recorded)			–	–	–	–
	AVC-I 100/24PN (AVC-I 50/24PN)		OFF	Disabled	720/24PN Native		Approx. 160 min. (Approx. 320 min.)	–	–	–	–
			ON	24				–	–	–	–
				Other than 24	720/24PN Native VFR (Audio cannot be recorded)			–	–	–	–
	DVCPRO HD/60P		OFF	Disabled	720/60P	DVCPRO HD	Approx. 64 min.	○	○	○	○
			ON	60				–	–	–	–
				30	720/30P Over60P 2:2 Pull Down			–	–	–	–
				24	720/24P Over60P 2:3 Pull Down			–	–	–	–
				Other than above	720/60P VFR			–	–	–	–
	DVCPRO HD/30PN		OFF	Disabled	720/30PN Native		Approx. 128 min.	–	–	–	–
			ON	30				–	–	–	–
				Other than 30	720/30PN Native VFR (Audio cannot be recorded)			–	–	–	–
	DVCPRO HD/24PN		OFF	Disabled	720/24PN Native		Approx. 160 min.	–	–	–	–
			ON	24				–	–	–	–
				Other than 24	720/24PN Native VFR (Audio cannot be recorded)			–	–	–	–
480-59.94i	DVCPRO 50/60i DVCPRO/60i DV/60i	60i	Disabled	Disabled	480/60i	DVCPRO50 DVCPRO*3 DV*4	Approx. 128 min. Approx. 256 min. *3 Approx. 256 min. *4	○	○	○	○
		30P			480/30P Over60i 2:2 Pull Down			○	○	○	○
		24P			480/24P Over60i 2:3 Pull Down			–	–	–	–
		24PA			480/24PA Over60i 2:3:3:2 Pull Down			–	–	–	–

*1 24P and 30P indicate recording at 23.98P and 29.97P, respectively, while 60P and 60i indicate recording at 59.94P and 59.94i, respectively. Native mode records active frames only.

*2 Recording times are indicated for a single 64 GB P2 card. Two cards double the recording time.
Since native VFR mode records only active frames, the recording time and actual shooting time differ.
Example: In 24PN recording, shooting at a frame rate of 60 frames will result in a shooting time of 24/60 (0.4 times).
In 24PN recording, shooting at a frame rate of 12 frames will result in a shooting time of 24/12 (2 times).

*3 For DVCPRO/60i

*4 For DV/60i

1394 input recording mode (when the REC SIGNAL option is set to 1394)

■When SYSTEM MODE is set to 1080-50i, 720-50P, 576-50i

Setting					Recording format		Recording time *1	Recording function			
SYSTEM MODE	REC FORMAT	CAMERA MODE	VFR	FRAME RATE [FRAME]				PRE REC	PROXY (optional)	INTERVAL, ONE SHOT	LOOP REC
1080-50i	Disabled	Disabled	Disabled	Disabled	1080/50i	DVCPRO HD	Approx. 64 min.	–	–	–	–
720-50P	Disabled	Disabled	Disabled	Disabled	720/50P			–	–	–	–
576-50i	DVCPRO50/50i	Disabled	Disabled	Disabled	576/50i	DVCPRO 50	Approx. 128 min.	–	–	–	–
	DVCPRO/50i					DVCPRO	Approx. 256 min.	–	–	–	–
	DV/50i					DV		–	–	–	–

*1 Recording times are indicated for a single 64 GB P2 card. Two cards double the recording time.

■When SYSTEM MODE is set to 1080-59.94i, 720-59.94P, 480-59.94i

Setting					Recording format *2		Recording time *3	Recording function			
SYSTEM MODE	REC FORMAT	CAMERA MODE	VFR	FRAME RATE [FRAME]				PRE REC	PROXY (optional)	INTERVAL, ONE SHOT	LOOP REC
1080-59.94i	Disabled	Disabled	Disabled	Disabled	1080/60i	DVCPRO HD	Approx. 64 min.	–	–	–	–
720-59.94P	Disabled	Disabled	Disabled	Disabled	720/60P			–	–	–	–
480-59.94i	DVCPRO50/60i	Disabled	Disabled	Disabled	480/60i	DVCPRO50	Approx. 128 min.	–	–	–	–
	DVCPRO/60i					DVCPRO	Approx. 256 min.	–	–	–	–
	DV/60i					DV		–	–	–	–

*2 60P and 60i is recorded at 59.94P and 59.94i, respectively.

*3 Recording times are indicated for a single 64 GB P2 card. Two cards double the recording time.

Recording settings and recording function table

The recording modes of the camera can be made to operate as described below using the setting menus.

Operating mode	Recording setting				Enabled and disabled functions and operations				
	REC SIGNAL (MENU)	REC FUNCTION (MENU)	REC FORMAT, CAMERA MODE (MENU) *6	VFR (MENU)	PRE REC function	Proxy recording (Thumbnail menu) (optional)	1394 output	TEXT MEMO	SHOT MARK
Recording via 1394 input	1394	Disabled	Disabled (Enabled at 576i, 480i)	Disabled	Disabled	Disabled	Disabled	Enabled	Enabled
INTERVAL REC	CAMERA	INTERVAL	50i (60i), 50P (60P), 25P (30P) only				Disabled (Enabled at playback *4)	Disabled	Disabled
ONE SHOT REC		ONE SHOT							
LOOP REC		LOOP					Enabled *4		Disabled *5
Native VFR		NORMAL	25PN (30PN, 24PN)	ON			Disabled (Enabled at playback *4)	Enabled	Enabled
Native recording (VFR OFF)				OFF					
Standard VFR			Other than 25PN (30PN, 24PN)	ON			Enabled *4		
Standerd recording (VFR OFF)				OFF	Enabled	Enabled	Enabled *4		

*4 DV/DVCPRO only. Disabled in AVC-Intra mode.

*5 Enabled in PAUSE mode after LOOP REC

*6 24P and 30P indicate recording at 23.98P and 29.97P, respectively, while 60P and 60i indicate recording at 59.94P and 59.94i, respectively. Native mode records active frames only.

Selecting video output

The table below lists available video output formats.
Use the setting menus listed below to select video output.

Setting menu	Setting
SDI SELECT (OUTPUT SEL screen)	Select the signal format (from AUTO, 1080i, 576i (480i)) to be output via the SDI OUT connector. *1
SETUP (SYSTEM SETUP screen)	When SYSTEM MODE is set to 480-59.94i, select the setup level for the signal (composite) output via the VIDEO OUT connector. ● 0%: 0% setup level for both output and recording ● 7.5%A: 7.5% setup level for output only (0% for recording) • The SETUP menu setting is enabled also during playback.
DOWNCON MODE (OUTPUT SEL screen)	Select the screen type for down-converted output (VIDEO OUT and SDI SELECT output as 576i (480i)) of HD mode (1080i, 720P).

*1 HD (1080i, 720P) output cannot display thumbnails and SDI OUT outputs monochrome black screen.

List of recording, playback and output formats

Camera recording mode (when the REC SIGNAL option is set to CAMERA)

■When SYSTEM MODE is set to 1080-50i, 720-50P, 576-50i

Setting					Recording format *1		SDI OUT *2		1394 output
SYSTEM MODE	REC FORMAT	CAMERA MODE	VFR	FRAME RATE [FRAME]			Video format	Audio	
1080-50i	AVC-I 100/50i (AVC-I 50/50i)	Disabled	Disabled	Disabled	1080/50i	AVC-I 100 (AVC-I 50)	1080-50i	4ch	No output
	AVC-I 100/25PN (AVC-I 50/25PN)				1080/25PN Native		1080-25PsF Over50i 2:2		
	DVCPRO HD/50i	50i			1080/50i	DVCPRO HD	1080-50i	4ch	1080-50i DVCPRO HD
		25P			1080/25P Over50i 2:2 Pull Down		1080-25PsF Over50i 2:2		
720-50P	AVC-I 100/50P (AVC-I 50/50P)	Disabled	OFF	Disabled	720/50P	AVC-I 100 (AVC-I 50)	720-50P	4ch	No output
			ON	12~50	720/50P		720-50P VFR		
	AVC-I 100/25PN (AVC-I 50/25PN)		OFF	Disabled	720/25PN Native		720-25P Over50P 2:2	4ch	
			ON	25					
				Other than 25	720/25PN Native VFR (audio cannot be recorded)		720-50P VFR	Muted	
	DVCPRO HD/50P		OFF	Disabled	720/50P	DVCPRO HD	720-50P	4ch	720-50P DVCPRO HD
			ON	50	720/50P				
				25	720/25P Over50P 2:2 Pull Down		720-25P Over50P 2:2		
				Other than above	720/50P VFR		720-50P VFR		
	DVCPRO HD/25PN		OFF	Disabled	720/25PN Native		720-25P Over50P 2:2	4ch	No output *4
			ON	25					
				Other than 25	720/25PN Native VFR (audio cannot be recorded)		720-50P VFR	Muted	
576-50i	DVCPRO 50/50i DVCPRO/50i DV/50i	50i	Disabled	Disabled	576/50i	DVCPRO50 DVCPRO DV	576-50i	4ch or 2ch *3	576-50i DVCPRO50 DVCPRO DV
		25P			576/25P Over50i 2:2 Pull Down		576-25PsF Over50i 2:2		

*1 Native mode records active frames only.
*2 Varies with SDI SELECT option. In the table above the SDI SELECT option is set to AUTO.
AUTO: depends on SYSTEM MODE
1080i: outputs 1080i also when the SYSTEM MODE is 720P.
576i: outputs as 576i at all times
*3 Uses a 4ch setting for DVCPRO50 and observes the 2CH or 4CH setting in the menu option 25M REC CH SEL in the AUDIO SETUP screen for DVCPRO and DV.
*4 Outputs 720-50P DVCPRO HD during playback.

◆ **NOTE**

VIDEO OUT outputs SD signals (576i) at all times.

■When SYSTEM MODE is set to 1080-59.94i, 720-59.94P, 480-59.94i

Setting					Recording format *1		SDI OUT *2		1394 output
SYSTEM MODE	REC FORMAT	CAMERA MODE	VFR	FRAME RATE [FRAME]			Video format	Audio	
1080-59.94i	AVC-I 100/60i (AVC-I 50/60i)	Disabled	Disabled	Disabled	1080/60i	AVC-I 100 (AVC-I 50)	1080-59.94i	4ch	No output
	AVC-I 100/30PN (AVC-I 50/30PN)				1080/30PN Native		1080-29.97PsF Over59.94i 2:2		
	AVC-I 100/24PN (AVC-I 50/24PN)				1080/24PN Native		1080-29.97PsF Over59.94i 2:3		
	DVCPRO HD/60i	60i	Disabled		1080/60i	DVCPRO HD	1080-59.94i	4ch	1080-59.94i DVCPRO HD
		30P			1080/30P Over60i 2:2 Pull Down		1080-29.97PsF Over59.94i 2:2		
		24P			1080/24P Over60i 2:3 Pull Down		1080-23.98PsF Over59.94i 2:3		
		24PA			1080/24PA Over60i 2:3:3:2 Pull Down		1080-23.98PsF Over59.94i 2:3:3:2		
720-59.94P	AVC-I 100/60P (AVC-I 50/60P)	Disabled	OFF	Disabled	720/60P	AVC-I 100 (AVC-I 50)	720-59.94P	4ch	No output
			ON	12-60			720-59.94P VFR		
	AVC-I 100/30PN (AVC-I 50/30PN)		OFF	Disabled	720/30PN Native		720-29.97P Over59.94P 2:2	4ch	
			ON	30					
				Other than 30	720/30PN Native VFR (Audio cannot be recorded)		720-59.94P VFR	Muted	
	AVC-I 100/24PN (AVC-I 50/24PN)		OFF	Disabled	720/24PN Native		720-23.98P Over59.94P 2:3	4ch	
			ON	24					
				Other than 24	720/24PN Native VFR (Audio cannot be recorded)		720-59.94P VFR	Muted	
	DVCPRO HD/60P		OFF	Disabled	720/60P	DVCPRO HD	720-59.94P	4ch	720-59.94P DVCPRO HD
			ON	60					
				30	720/30P Over60P 2:2 Pull Down		720-29.97P Over59.94P 2:2		
				24	720/24P Over60P 2:3 Pull Down		720-23.98P Over59.94P 2:3		
				Other than above	720/60P VFR		720-59.94P VFR		
	DVCPRO HD/30PN		OFF	Disabled	720/30PN Native		720-29.97P Over59.94P 2:2		No output *4
			ON	30					
				Other than 30	720/30PN Native VFR (Audio cannot be recorded)		720-59.94P VFR	Muted	
	DVCPRO HD/24PN		OFF	Disabled	720/24PN Native		720-23.98P Over59.94P 2:3	4ch	
			ON	24					
				Other than 24	720/24PN Native VFR (Audio cannot be recorded)		720-59.94P VFR	Muted	
480-59.94i	DVCPRO50/60i DVCPRO/60i DV/60i	60i	Disabled	Disabled	480/60i	DVCPRO50 DVCPRO*5 DV*6	480-59.94i	4ch or 2ch*3	480-59.94i DVCPRO50 DVCPRO*5 DV*6
		30P			480/30P Over60i 2:2 Pull Down		480-29.97PsF Over59.94i 2:2		
		24P			480/24P Over60i 2:3 Pull Down		480-23.98PsF Over59.94i 2:3		
		24PA			480/24PA Over60i 2:3:3:2 Pull Down		480-23.98PsF Over59.94i 2:3:3:2		

*1 24P and 30P indicate recording at 23.98P and 29.97P, respectively, while 60P and 60i indicate recording at 59.94P and 59.94i, respectively. Native mode records active frames only.

*2 Varies with SDI SELECT option. In the table above the SDI SELECT option is set to AUTO.
AUTO: depends on SYSTEM MODE
1080i: outputs 1080i also when the SYSTEM MODE is 720P.
480i: outputs as 480i at all times

*3 Uses a 4ch setting for DVCPRO50 and observes the 2CH or 4CH setting in the menu option 25M REC CH SEL in the AUDIO SETUP screen for DVCPRO and DV.

*4 Outputs 720-59.94P DVCPRO HD during playback.

*5 For DVCPRO/60i

*6 For DVI/60i

◆ **NOTE**

VIDEO OUT outputs SD signals (480i) at all times.

1394 input recording mode (when the REC SIGNALoption is set to 1394)

■When SYSTEM MODE is set to 1080-50i, 720-50P, 576-50i

Setting					Recording format		SDI OUT *1	
SYSTEM MODE	RECFORMAT	CAMERA MODE	VFR	FRAME RATE [FRAME]			Video format	Audio
1080-50i	Disabled	Disabled	Disabled	Disabled	1080/50i	DVCPRO HD	1080-50i	4ch
720-50P	Disabled	Disabled	Disabled	Disabled	720/50P		720-50P	4ch
576-50i	DVCPRO50/50i	Disabled	Disabled	Disabled	576/50i	DVCPRO 50	576-50i	4ch
	DVCPRO/50i					DVCPRO		2ch
	DV/50i					DV		2ch or 4ch *2

*1 Varies with the SDI SELECT option. The table above shows operating conditions when the SDI SELECT option is set to AUTO.
AUTO: depends on SYSTEM MODE
1080i: outputs 1080i also when the SYSTEM MODE is 720P.
576i: outputs as 576i at all times

*2 32 kHz 4ch input is converted and recorded at 48 kHz 4ch.

■When SYSTEM MODE is set to 1080-59.94i, 720-59.94P, 480-59.94i

Setting					Recording format *3		SDI OUT *4	
SYSTEM MODE	REC FORMAT	CAMERA MODE	VFR	FRAME RATE [FRAME]			Video format	Audio
1080-59.94i	Disabled	Disabled	Disabled	Disabled	1080/60i	DVCPRO HD	1080-59.94i	4ch
720-59.94P	Disabled	Disabled	Disabled	Disabled	720/60P		720-59.94P	4ch
480-59.94i	DVCPRO50/60i	Disabled	Disabled	Disabled	480/60i	DVCPRO50	480-59.94i	4ch
	DVCPRO/60i					DVCPRO		2ch
	DV/60i					DV		2ch or 4ch *5

*3 60P and 60i is recorded at 59.94P and 59.94i, respectively.

*4 Varies with the SDI SELECT option. The table above shows operating conditions when the SDI SELECT option is set to AUTO.
AUTO: depends on SYSTEM MODE
1080i: outputs 1080i also when the SYSTEM MODE is 720P.
480i: outputs as 480i at all times

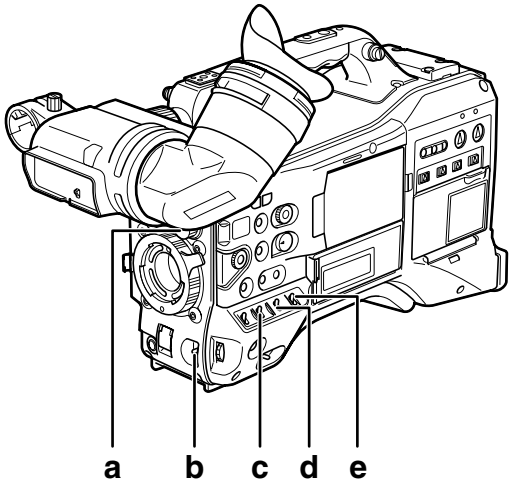
*5 32 kHz 4ch input is converted and recorded at 48 kHz 4ch.

Adjusting the White Balance and Black Balance

To record high-quality video with the AG-HPX301E, the black and white balances must be adjusted according to conditions.
For higher quality, it is recommended that the adjustments should be made in this order AWB (white balance adjustment) → ABB (black balance adjustment) → AWB (white balance adjustment).

Adjusting the White Balance

Whenever light conditions change, the white balance must be readjusted.
To adjust the white balance, follow the steps below.



a ND FILTER control
This control adjusts the amount of light entering the MOS sensor.

b AUTO W/B BAL switch
Use for automatic control of white balance.

c GAIN selector switch
Normally set to 0 dB. If this is too dark, adjust gain as necessary.

d OUTPUT selector switch
Set to CAM.

e WHITE BAL switch
Set to A or B.

1 Set the GAIN, OUTPUT and WHITE BAL switches.

2 Adjust the ND FILTER control according to the light conditions.

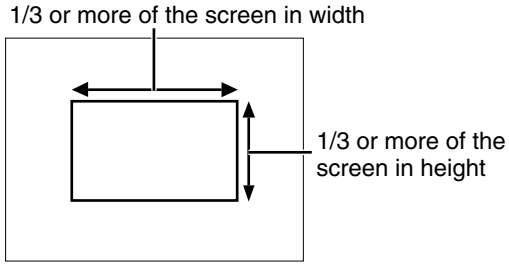
For examples of ND FILTER adjustments, see [Shooting and Recording/Playback Functions Section] (page 18).

3 Place a white pattern at a point where the light conditions match those for the light source of the subject. Then zoom-in on the white pattern so that white colour appears in the screen.

- A white object (cloth or wall) may be used instead of a white pattern. The illustration below shows the required size for the white space.

◆ **NOTE**

- **Do not point the camera at a high-brightness area.**
- **The white object must appear at the center of the screen.**



4 Adjust the lens iris.

- Use the Y GET function (for details, refer to page 57) and adjust the iris to a approximately 70% of incoming light.

5 Turn the AUTO W/B BAL switch toward AWB and release it.

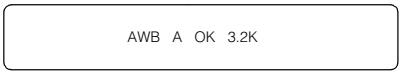
- The switch returns to the central position with the white balance automatically adjusted.

6 During an adjustment, the viewfinder displays the following message:



7 The adjustment will take effect in a few seconds, and the following message will appear:

- The adjusted value is automatically stored in the selected memory (A or B).



- “C TEMP+7” to “C TEMP-7” will appear when COLOR TEMP of the scene file is set to the value other than 0.

8 If the subject's colour temperature is lower than 2300K or higher than 9900K the following message appears:

- If the arrow points down (↓) the actual colour temperature is lower than the temperature indicated. If the arrow points up (↑) the actual temperature is higher than the temperature indicated.



When you have no time to adjust the white balance

Position the WHITE BAL switch at PRST.

- Turning the AUTO W/B BAL switch to AWB toggles the color temperature between 3200K and 5600K.

When the white balance has not been automatically adjusted

When the white balance has not been successfully adjusted, the viewfinder displays an error message.

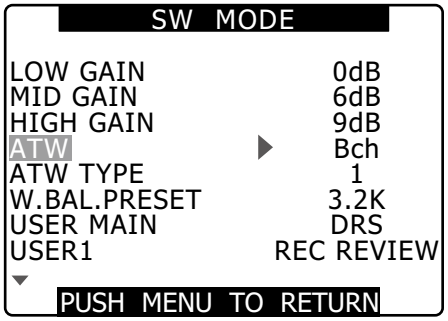
Error message	Description
AWB Ach (or Bch) NG	The color temperature is too high or too low.
LOW LIGHT	There is insufficient light.
LEVEL OVER	There is too much light.

Viewfinder displays related to white balance

See [Viewfinder Screen Status Displays] (page 70).

Setting auto tracking white balance (ATW)

This camera is equipped with an auto tracking white balance (ATW) function that automatically adjusts the white balance of images in accordance with lighting conditions.
The ATW function can be assigned to the WHITE BAL switch B by setting the menu option ATW in the SW MODE screen to B ch.
It can also be assigned to the USER MAIN, USER1, USER2 buttons.
For details, refer to [Assigning functions to USER buttons] (page 57).



Cancelling auto tracking white balance

Press the USER button to which ATW was assigned a second time or change the WHITE BAL switch position. If ATW was assigned to the WHITE BAL switch B, the USER button cannot be used to cancel the function.

◆ **NOTE**

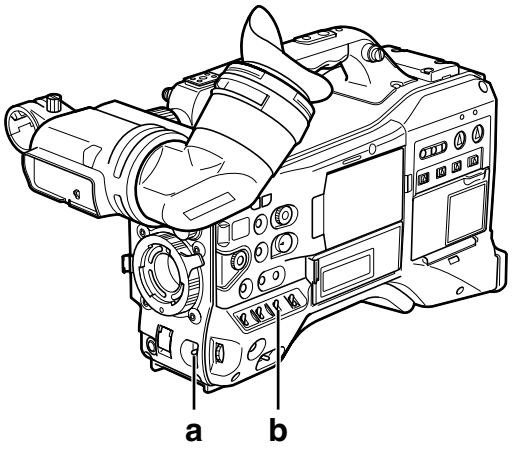
This function does not provide a 100% accurate white balance. The tracking performance relative to changes in ambient lighting and white balance performance have been given a degree of latitude.

Adjusting the Black Balance

The black balance must be adjusted when:

- You use your AG-HPX301E the first time.
- Your AG-HPX301E has not been used for some time.
- The ambient temperature has changed substantially.
- The gain switchover value has been changed.
- The menu options SYSTEM MODE and REC FORMAT in the SYSTEM SETUP screen.

Adjust the black balance before shooting to ensure optimum video quality.



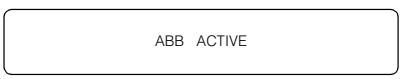
a AUTO W/B BAL switch
Use for automatic control of white balance.

b OUTPUT selector switch
Set to CAM.

1 Tilt the AUTO W/B BAL switch so that it is positioned at [ABB], then release it.

- The switch returns to the central position with the black balance automatically adjusted.

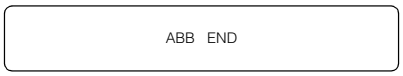
2 During adjustment, the viewfinder displays the following message:



◆ **NOTE**

During adjustment, the lens iris automatically becomes CLOSE.

3 The adjustment will take effect in a few seconds and the following message will appear:



- The adjusted value is automatically stored in the memory.

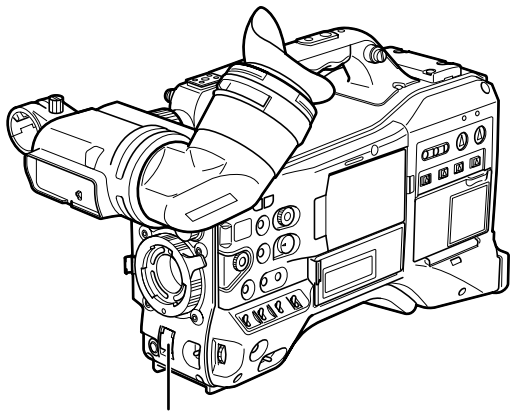
◆ **NOTE**

- **Ensure that the lens connector is connected and the lens iris is CLOSE.**
- **During a black balance adjustment, light is automatically cut off.**
- **ABB NG appears when the lens connector has come loose.**
- **Black balance adjustment is not available during recording.**
- **Pressing the REC button during ABB adjustment will not start recording on a P2 card.**

Setting the Electronic Shutter

Setting the Shutter Mode and Speed

1 Press the SHUTTER switch positioned at OFF towards ON.



SHUTTER switch

2 Press the SHUTTER switch towards [SEL]. Repeat this switchover until the desired mode or speed appears in the viewfinder screen.

- If all modes and speeds are available, the display changes in the following order:

■When SYSTEM MODE is set to 1080-50i, 720-50P, 576-50i

For 50i and 50P recording

S/S → (1/12.5) → (1/25) → 1/50 → 1/60 → 1/120 → 1/250 → 1/500 → 1/1000 → 1/2000

For 25P recording

S/S → (1/6.25) → (1/12.5) → 1/50 → 1/60 → 1/120 → 1/250 → 1/500 → 1/1000 → 1/2000

- The bracketed ( ) speeds cannot be selected when VFR is on.

■When SYSTEM MODE is set to 1080-59.94i, 720-59.94P, 480-59.94i

For 60i and 60P recording

S/S → (1/15) → (1/30) → 1/60 → 1/100 → 1/120 → 1/250 → 1/500 → 1/1000 → 1/2000

For 30P recording

S/S → (1/7.5) → (1/15) → 1/60 → 1/100 → 1/120 → 1/250 → 1/500 → 1/1000 → 1/2000

For 24P recording

S/S → (1/6) → (1/12) → 1/60 → 1/100 → 1/120 → 1/250 → 1/500 → 1/1000 → 1/2000

- The bracketed ( ) speeds cannot be selected when VFR is on.

◆ NOTE

- **In any electronic shutter mode, a slower shutter speed will reduce camera sensitivity.**
- **In auto iris mode, a faster shutter speed will increase the aperture and lower the depth of field.**
- **Changes in synchro scan and shutter speed settings may cause screen flicker.**
- **Under fluorescent lighting and other discharge lighting systems, horizontal stripes may appear on the screen. Changing the shutter speed may correct this problem.**
- **A subject that is captured when moving quickly across the field of view may appear distorted. This is due to the signal read out format of the image sensor (MOS sensor) and is not a malfunction.**
- **The red, blue and green dots that may appear on the screen at low shutter speeds do not indicate a malfunction.**

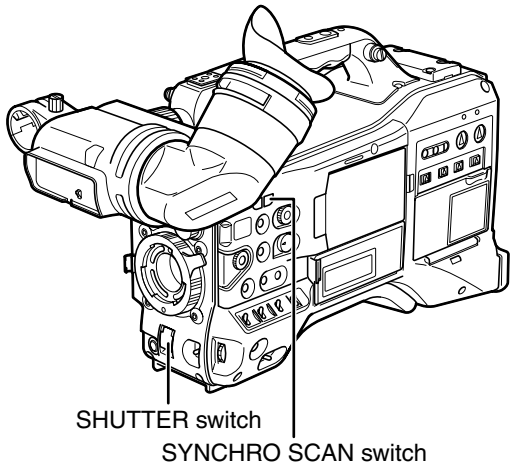
Viewfinder displays relating to the shutter

See [Viewfinder Screen Status Displays] (page 70).

Placing the Camera-recorder in SYNCHRO SCAN Mode

To place the camera-recorder in SYNCHRO SCAN mode, follow the steps below.

1 Press the SHUTTER switch positioned at ON towards SEL, to place the camera-recorder in SYNCHRO SCAN (S/S) mode.



2 In SYNCHRO SCAN mode, use the SYNCHRO SCAN switch to make stepless changes in the range between 1/50.0 s and 1/250.0 s (for 50i mode).

- Hold down the SYNCHRO SCAN switch to speed up the rate of shutter speed changes.
  If shutter speed changes stop before the desired shutter speed has been reached, press again to continue changing shutter speeds.

Range of variation in each mode

■When SYSTEM MODE is set to 1080-50i, 720-50P, 576-50i

- 50P/50i mode: 1/50.0 to 1/250.0
- 25P/25PN mode: 1/25.0 to 1/250.0
- When the SYNC SCAN DISP option in DISPLAY SETUP is set to deg: 3.0d to 359.5d

■When SYSTEM MODE is set to 1080-59.94i, 720-59.94P, 480-59.94i

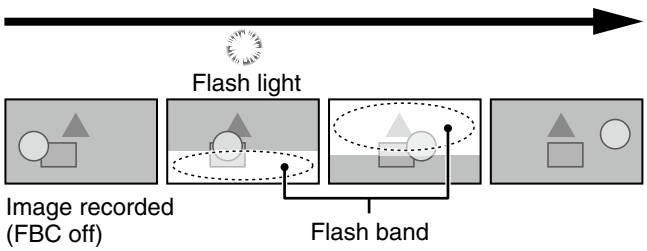
- 60P/60i mode: 1/60.0 to 1/249.8
- 30P/30PN mode: 1/30.0 to 1/249.8
- 24P/24PA/24PN mode: 1/24.0 to 1/249.8
- When the SYNC SCAN DISP option in DISPLAY SETUP is set to deg: 3.0d to 359.5d

- If SYSTEM MODE setting is changed, shutter speed may also be changed.

Setting the menu option SYNC SCAN DISP in the DISPLAY SETUP screen to deg provides a guide to setting and displaying shutter angle.

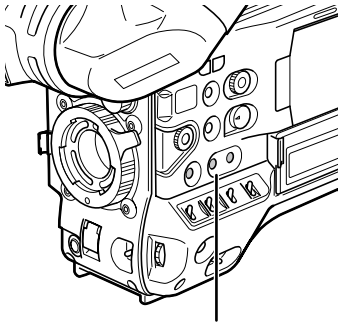
FBC (Flash Band Compensation) Function

This camera-recorder comes with a function to compensate for and minimize light band (flash band) interference that occurs with the MOS imager when shooting in an environment where flash photography is taking place.



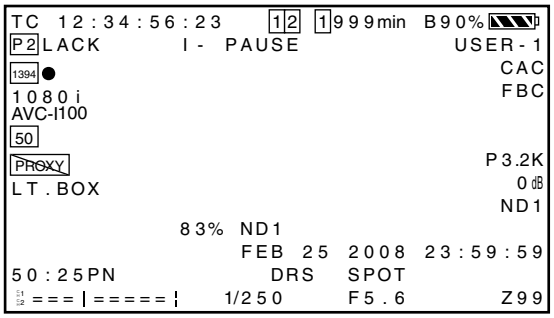
Setting FBC function

Assign the FBC function to a USER button.
Press the USER button to which the FBC function has been assigned to turn it on and automatically detect and compensate for flash light from still cameras.
For details, refer to [Assigning functions to USER buttons] (page 57).



USER MAIN, USER1 and USER2 buttons

The status display indicates “FBC” when the FBC function is on. *1



*1 Not displayed when the menu option OTHER DISPLAY in the DISPLAY SETUP screen is set to OFF.

◆ **NOTE**

The following phenomena that may occur in video that includes flash light is due to FBC compensation and not indicative of a malfunction.

- **Moving subjects may appear to be stationary for an instant.**
- **Resolution decreases in video exposed to flash light.**
- **Horizontal lines appear in video footage exposed to flash light.**

Using FBC

FBC goes on when the brightness of the lower half of the image differs markedly from the previous half, which could be caused by light from a camera flash or other strong light source. Since FBC may be incorrectly activated in certain shooting environments, for example, in zooming that includes a bright window, be sure to use the function only for shooting footage exposed to flash light.

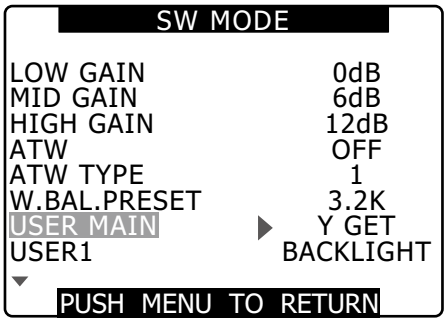
In some shooting environments adequate FBC effect may not be obtained even when a flash goes off.

FBC requirements

- **The FBC function is available in the 1080/50i, 720/50P (VFR OFF) 576/50i, 1080/60i, 720/60P (VFR OFF) and 480/60i modes when the shutter off.**
- **Switching to an operating mode other than 1080/50i, 720/50P (VFR OFF) 576/50i, 1080/60i, 720/60P (VFR OFF) and 480/60i turns FBC off if on.**
  To turn on FBC after returning to 1080/50i, 720/50P (VFR OFF) 576/50i, 1080/60i, 720/60P (VFR OFF) and 480/60i, press the USER button to which the function is assigned.
- **Turning the shutter on when the FBC function is engaged temporarily turns it off.**
  The FBC function goes back on when the shutter is later turned off.
- **Turning the power off disengages the FBC function.**

Assigning functions to USER buttons

The USER MAIN, USER1, and USER2 buttons can be assigned user-selected functions.
Use the menu options USER MAIN, USER1, and USER2 to assign functions to respective button. Select these items from the setting menu SW MODE screen.



Selectable Functions

- **REC REVIEW:**
  Assigns REC REVIEW.
- **SPOTLIGHT:**
  Assigns auto iris control on/off for spotlight.
- **BACKLIGHT:**
  Assigns auto iris control on/off for backlight compensation.
- **ATW:**
  Turns the ATW function on or off.
- **ATW LOCK:**
  Pressing this lock during ATW operation locks the white balance. Press again to start the ATW function again.
- **GAIN:24dB:**
  Assigns a function that raises gain by 24 dB.
- **Y GET:**
  Assigns a function that displays the brightness level at the center of the image.
- **DRS:**
  Assigns a function that stretches the dynamic range. A function that magnifies the dynamic range by compressing the video level in high-brightness areas.
- **TEXT MEMO:**
  Assigns text memory recording.
- **SLOT SEL:**
  Assigns P2 card slot selection.
- **SHOT MARK:**
  Assigns the shot marker function.
- **MAG A. LVL:**
  Assigns a function that magnifies the audio level meter.
- **PRE REC:**
  Assigns a function that turns the PRE REC function on and off.
- **PC MODE:**
  Assigns a function that switches the USB device mode or the USB host mode on and off. Switching the USB device mode and USB host mode on and off is set by the menu option PC MODE SELECT in the SYSTEM SETUP screen.
- **WFM:**
  Assigns a function that switches WAVE FORM display. The WAVE FORM display is selected using the menu option WFM (page 134) in the SW MODE screen.
- **FBC:**
  Turns the FBC function on or off.

◆ **NOTE**

The default settings are listed below.

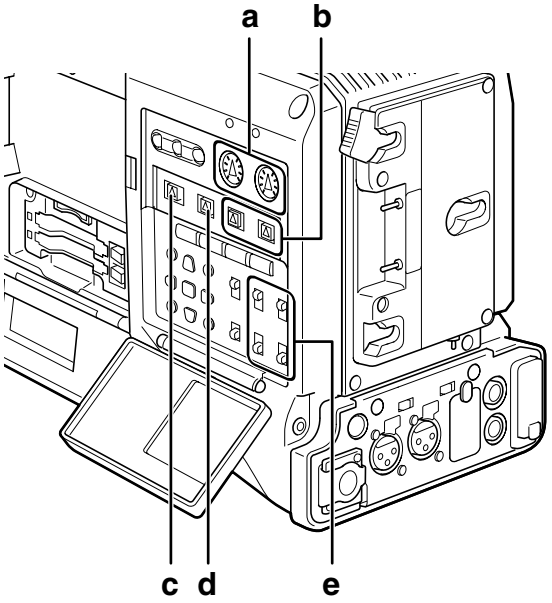
- **USER MAIN: Y GET**
- **USER1: BACKLIGHT**
- **USER2: TEXT MEMO**

Selecting Audio Input Signals and Adjusting Recording Levels

This AG-HPX301E supports independent four-channel audio recording in any format (HD or SD).
When the AUDIO SELECT CH1/CH2 switch is positioned at [AUTO], the recording levels for Audio Channels 1 and 2 are automatically adjusted. To manually adjust the recording levels, position the switch at [MAN].
A setting menu allows you set the recording levels for Audio Channels 3 and 4 either to automatic adjustment or manual mode.

Selecting Audio Input Signals

The input signals to be recorded on Audio Channels 1, 2, 3, and 4 are selected with the AUDIO IN switch. For more information, see [Audio (input) Function Section] (page 16).



a AUDIO LEVEL CH1/CH2 controls

b AUDIO SELECT CH1/CH2 switch

c MONITOR SELECT CH1/3, ST, CH2/4 selector switch

d MONITOR SELECT CH1/2, CH3/4 selector switch

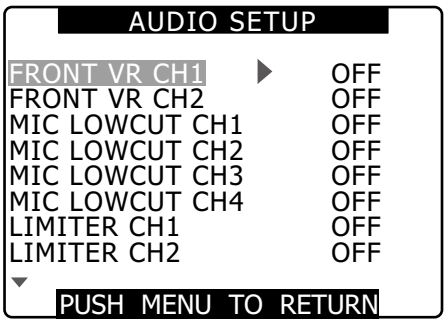
e AUDIO IN switch

Your AG-HPX301E is factory-set to perform no recording on Audio Channels 3 and 4 in the DVCPRO and DV formats. To enable four-channel recording, the menu option 25M REC CH SEL on the AUDIO SETUP screen must be set to 4CH.
For details on switch settings and the input system, see [AUDIO IN switch] (page 16).

◆ **NOTE**

• The audio signals recorded on the four channels are output as is (SDI).

Use the AUDIO SETUP screen in the setting menu to make detailed audio settings.



Adjusting Recording Levels

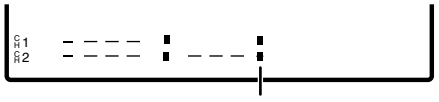
To adjust the recording levels for Audio Channels 1 and 2, follow the steps below.

1 Position the MONITOR SELECT CH1/2, CH3/4-selector switch at CH1/2 so that the audio level meter on the display window will provide CH1 and CH2 indications. Ensure that the channel indications displayed in the window are 1 and 2.

2 Position the AUDIO SELECT CH1/CH2 switch at [MAN].

3 While checking the audio channel level meter in the display window or the audio level meter in the viewfinder, adjust the AUDIO LEVEL CH1/CH2 control.

• Note that if the level exceeds the top bar (0 dB), the word OVER illuminates to show that the input level is excessive. Adjust so that maximum sound levels do not reach the 0 dB bar.



OVER indication

◆ **NOTE**

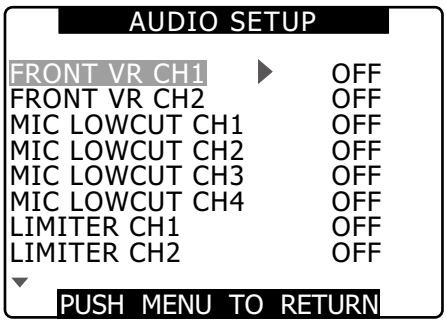
Pressing the USER button to which the magnification of the audio level meters (MAG A.LVL) has been assigned magnifies the audio level meters.
For details, refer to [Audio level meter magnification] (page 78).

When operating the AG-HPX301E without a sound recordist, it is recommended that the FRONT AUDIO LEVEL control should be used to adjust the audio level.
In advance, check the level meter in the viewfinder screen and use the FRONT AUDIO LEVEL control to adjust the appropriate audio channel to prevent input of excessive audio signals.

Selecting Function for the FRONT AUDIO LEVEL Control

Use the menu options FRONT VR CH1 and FRONT VR CH2 in the AUDIO SETUP screen to determine whether or not the FRONT AUDIO LEVEL control should be enabled. Selecting an input signal in the menu will enable FRONT AUDIO LEVEL control operations for that input signal.

- When the FRONT AUDIO LEVEL control is set to level 10, it controls AUDIO LEVEL CH1 and CH2.



CH3 and CH4 Recording Levels

Conditions and input levels set in the menu options AUTO LEVEL CH3 and the AUTO LEVEL CH4 in the AUDIO SETUP screen change the operation of the audio level of channels 3 and 4 as shown below. These functions cannot be manually adjusted.
Each option can be selected in the AUDIO SETUP screen.

AUTO LEVEL CH3/CH4	Input level	
	LINE	MIC
ON	AGC* ON	AGC ON
OFF	AGC/LIMITER OFF	LIMITER ON

* AGC: Audio Gain Control

Setting Time Data

The camera provides time data such as time codes, user bits, time of day (real-time) data, which is recorded on each frame alongside video data. It is also recorded as as data in clip metadata files.

Time data overview

■Time code

Use the TCG switch to select Rec Run or Free Run mode.

- Free Run: The time code advances constantly whether the camera is on or not just like time itself. Recording using a slave-locked time code input to the TC IN or DVCPRO/DV connectors is also possible.
- Rec Run: The time code advances only during recording. This will enable continuation of time codes in previously recorded clips and when the power is turned off or new P2 cards are inserted to continue recording.

◆ **NOTE**

The following events will disrupt time code continuity.

- **When clips are deleted**
- **When a 24P or 24PA frame rate is selected**
- **When 25PN (30PN, 24PN) is selected**
- **When a recording is interrupted by a REC WARNING or other abnormality**

User bits

- Two types of user bits are provided internally: (LTC UB: recorded as LTC, output via the TC OUT connector as LTC embedded in HD SDI) and VITC (in DVCPRO recorded in the VIDEO AUX area and output as VITC embedded in HD SDI).
- LTC UB enables the recording of user settings, time, date, time codes and similar values, the frame rate data for camera capture and external input values (via TC IN or DVCPRO/DV connector input).
- VITC user bits record the frame rate data of camera capture.
- The user bits in clip metadata record the LTC UB value at the start of recording.

■Date (real time)

- The built-in clock calculates the year, month, day and time from the internal clock to display on video in the LCD, viewfinder and VIDEO OUT and other video output.
- The internal clock is not only used to calculate the free run time code when the power is off and to set the user bit year, date and time, but also to set file creation dates when clips are recorded that determine the order of thumbnails and playback order.
- It is also used for generating clip metadata and UMID (Unique Material Identifier).
  For details, see [Setting Date and Time of Internal Clock] (page 26).

Recording time codes and user bits

■When SYSTEM MODE is set to 1080-50i, 720-50P, 576-50i

System setting status					Recorded TC		Output TC		Displayed TC	Recorded UB		Output UB		
SYSTEM MODE	REC SIGNAL	REC FORMAT	CAMERA MODE	FRAME RATE	LTC	VITC	TC OUT	LTC and VITC embedded in HD SDI	TC tc (24/30 conversion)	LTC UB	VITC UB	TC OUT connector UB*1	LTC UB embedded in HD SDI*1	VITC UB embedded in HD SDI
1080-50i	CAMERA	DVCPROHD/50i	50i, 25P	—	R-RUN/ F-RUN*3 25 frames	Same as LTC value	Outputs LTC	Outputs LTC	TC: 25 frames	Follows UB MODE • In 'EXT' slaves to UB in TC IN connector	Frame rate data	Outputs LTC UB	Outputs LTC UB	Frame rate data
		AVC-I100/50i AVC-I50/50i AVC-I100/25PN AVC-I50/25PN	—	—										
	1394	DVCPROHD/50i	—	—	R-RUN/ F-RUN*2 25 frames	Records VAUX TC in 1394 input at all times*5	Outputs LTC	Outputs LTC	TC: 25 frames	Follows UB MODE • In 'EXT' slaves to LTC UB in 1394 input	Records VITC UB in 1394 input at all times	Outputs LTC UB	Outputs LTC UB	Outputs VITC UB
720-50P	CAMERA	DVCPROHD/50P AVC-I100/50P AVC-I50/50P	—	12-50 frames	R-RUN/ F-RUN*3 25 frames	Same as LTC value	Outputs LTC	Outputs LTC	TC: 25 frames	Follows UB MODE • In 'EXT' slaves to UB in TC IN connector	Farme rate data	Outputs LTC UB	Outputs LTC UB	Frame rate data
		DVCPROHD/25PN AVC-I100/25PN AVC-I50/25PN	—	25 frames	R-RUN/ F-RUN*4 Every active frame 25 frames					Follows UB MODE • In 'EXT' slaves to UB in TC IN connector				
			—	Other than 25 frames	R-RUN locked Every active frame 25 frames		Matches recorder TC at start of recording 25 frames/s	Matches recorder TC at start of recording 25 frames/s						
	1394	DVCPROHD/50P	—	—	R-RUN/ F-RUN*2 25 frames	Records VAUX TC in 1394 input at all times*5	Outputs LTC	Outputs LTC	TC: 25 frames	Follows UB MODE • In 'EXT' slaves to LTC UB in 1394 input	Records VITC UB in 1394 input at all times	Outputs LTC UB	Outputs LTC UB	Outputs VITC UB
576-50i	CAMERA	DVCPRO50/50i DVCPRO/50i DV/50i	50i, 25P	—	R-RUN/ F-RUN*3 25 frames	Same as LTC value (but not for DV)	Outputs LTC	No input	TC: 25 frames	Follows UB MODE • In 'EXT' slaves to UB in TC IN connector	Frame rate data	Outputs LTC UB	No input	No input
	1394		—	—	R-RUN/ F-RUN*2 25 frames	Records VAUX TC in 1394 input at all times (No DV)*5	Outputs LTC		TC: 25 frames	Follows UB MODE • In 'EXT' slaves to LTC UB in 1394 input	Records VITC UB in 1394 input at all times	Outputs LTC UB		

*1 When UB MODE is FRM.RATE, playback of native clips is the pulldown frame rate read from VITC UB.

*2 In Free Run mode, it is slaved to the value input to the DVCPRO/DV connector. It does not slave it to the time code from the TC IN connector.

*3 In Free Run mode, it is slaved to the time code input to the TC IN connector.

*4 In Free Run mode, it is slaved to the time code input to the TC IN connector. But not slaved to it during recording.

*5 VAUX TC is time code recorded in the video AUX area in the DVC format.

■When SYSTEM MODE is set to 1080-59.94i, 720-59.94P, 480-59.94i

System setting status					Recorded TC		Output TC		Displayed TC	Recorded UB		Output UB		
SYSTEM MODE	REC SIGNAL	REC FORMAT	CAMERA MODE	FRAME RATE	LTC	VITC	TC OUT	LTC and VITC embedded in HD SDI	TC tc (24/30 conversion)	LTC UB	VITC UB	TC OUT connector UB *1	LTC UB embedded in HD SDI *1	VITC UB embedded in HD SDI
1080 -59.94i	CAMERA	DVCPROHD/60i	60i, 30P	—	R-RUN/F-RUN *3 DF/NDF 30 frames	Same as LTC value	Outputs LTC	Outputs LTC	TC: 30 frames tc: 24 frames	Follows UB MODE. In 'EXT' slaves to UB in TC IN connector	Frame rate data	Outputs LTC UB	Outputs LTC UB	Frame rate data
			24P, 24PA	—	R-RUN/F-RUN*5 NDF locked 30 frames									
		AVC-I100/60i AVC-I50/60i AVC-I100/30PN AVC-I50/30PN	—	—	R-RUN/F-RUN*3 DF/NDF 30 frames									
		AVC-I100/24PN AVC-I50/24PN	—	—	R-RUN/F-RUN*7 NDF locked 24 frames		Converted to 30 frames based on LTC	Converted to 30 frames based on LTC	Recording TC: 24 frames Playback TC: 24 frames tc: 30 frames			Output adjusted to Over 60i based on LTC UB	Output adjusted to Over 60i based on LTC UB	
	1394	DVCPROHD/60i	—	—	R-RUN/F-RUN*2 DF/NDF 30 frames	Records VAUX TC in 1394 input at all times *6	Outputs LTC	Outputs LTC	TC: 30 frames tc: 24 frames	Follows UB MODE. In 'EXT' slaves to LTC UB in 1394 input	Records VITC UB in 1394 input at all times	Outputs LTC UB	Outputs LTC UB	Outputs VITC UB
720 -59.94P	CAMERA	DVCPROHD/60P AVC-I100/60P AVC-I50/60P	—	Other than 24 frames	R-RUN/F-RUN*3 DF/NDF 30 frames	Same as LTC value	Outputs LTC	Outputs LTC	TC: 30 frames tc: 24 frames	Follows UB MODE. In 'EXT' slaves to UB in TC IN connector	Frame rate data	Outputs LTC UB	Outputs LTC UB	Frame rate data
			—	24 frames	R-RUN/F-RUN*5 NDF locked 30 frames									
		DVCPROHD/30PN AVC-I100/30PN AVC-I50/30PN	—	30 frames	R-RUN/F-RUN*4 DF/NDF Every active frame 30 frames									
			—	Other than 30 frames	R-RUN locked DF/NDF Every active frame 30 frames		Matches recorder TC at start of recording 30 frames/s	Matches recorder TC at start of recording 30 frames/s						
		DVCPROHD/24PN AVC-I100/24PN AVC-I50/24PN	—	24 frames	R-RUN/F-RUN*7 NDF locked Every active frame 24 frames		Converts and outputs LTC to 30 frames	Ouputs LTC	Recording TC: 24 frames Playback TC: 24 frames tc: 30 frames			Output adjusted to Over 60P based on LTC UB	Output adjusted to Over 60P based on LTC UB	
			—	Other than 24 frames	R-RUN locked NDF Every active frame 24 frames		Matches recorder TC at start of recording 30 frames/s	Matches recorder TC at start of recording 30 frames/s						
	1394	DVCPROHD/60P	—	—	R-RUN/F-RUN*2 DF/NDF 30 frames	Records VAUX TC in 1394 input at all times *6	Ouputs LTC	Ouputs LTC	TC: 30 frames tc: 24 frames	Follows UB MODE. In 'EXT' slaves to LTC UB in 1394 input	Records VITC UB in 1394 input at all times	Outputs LTC UB	Outputs LTC UB	Outputs VITC UB
480 -59.94i	CAMERA	DVCPRO50/60i DVCPRO/60i DV/60i	60i, 30P	—	R-RUN/F-RUN*3 DF/NDF 30 frames	Same as LTC value (but not for DV)	Outputs LTC	No input	TC: 30 frames tc: 24 frames	Follows UB MODE. In 'EXT' slaves to UB in TC IN connector	Frame rate data	Outputs LTC UB	No input	No input
			24P, 24PA	—	R-RUN/F-RUN*5 NDF locked 30 frames									
	1394		—	—	R-RUN/F-RUN*2 DF/NDF 30 frames	Records VAUX TC in 1394 input at all times (No DV)*6				Follows UB MODE. In 'EXT' slaves to LTC UB in 1394 input	Records VITC UB in 1394 input at all times	Ouputs LTC UB		

*1 When UB MODE is FRM. RATE, playback of native clips is the pulldown frame rate read from VITC UB.

*2 In Free Run mode, it is slaved to the value input to the DVCPRO/DV connector. It does not slave it to the time code from the TC IN connector.

*3 In Free Run mode, it is slaved to the time code input to the TC IN connector.

*4 In Free Run mode, it is slaved to the time code input to the TC IN connector. But not slaved to it during recording.

*5 In Free Run mode, it is slaved when TC input to the TC IN connector is non-drop frame. But not slaved to it during recording.

*6 VAUX TC is time code recorded in the video AUX area in the DVC format.

*7 In Free Run mode, it is slaved to the time code input to the TC IN connector, whose value is converted to 24 frames when it was NDF 30 frames. But not slaved to it during recording.

Setting user bits

Use the setting menu UB MODE on the RECORDING SETUP screen to select the user bits to record in the subcode area.

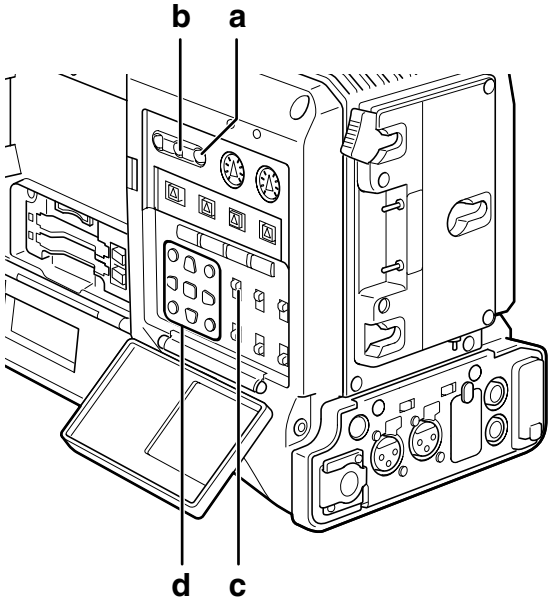
- USER:
  Records internal user values.
  To set user values, set the TCG switch to SET to open the setting menu UB PRESET screen.
  Set values are retained after the power is turned off.
  See also [Entering the User Bits] (this page).
- TIME:
  Records the time calculated by the internal clock.
- DATE:
  Records the year, month and day time digits from the internal clock.
- EXT:
  Records the user bits input to the TC IN connector.
  Recording of 1394 input also records user bits input to the DVCPRO/DV connector.
- TCG:
  Records the time code value.
- FRM. RATE:
  Records the frame rate information of camera capture.
  A native recorded clip is played back at the same frame rate as the VITC UB regardless of recorded values. Use this setting when a PC or other editing device is to use the user bit frame rate.
  For details, see [Frame rate information recorded in user bits] (page 64).

- To slave lock to the user bits input to the TC IN connector, set to EXT.
- In slave mode, the UB indicator is highlighted.
- A slave relationship, once started, continues even after input from the TC IN or DVCPRO/DV connector ends. Note that the following events release user bit slave status.
  - When a UB MODE option is set to something other than EXT.
  - When UB PRESET is performed
  - Switching to 1394 in the menu option REC SIGNAL in the SYSTEM SETUP screen.
  - Turning the power off.

  The internal user value retains the slave values even after slave release.

Entering the User Bits

The user bits allow information, including memos that use up to eight-digit hexadecimal numbers (date and time), to be recorded in the Subcode area.



a RESET button

b COUNTER button

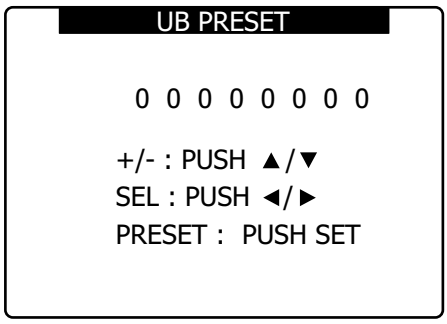
c TCG switch

d CURSOR and SET buttons

1 Set the COUNTER button to UB.

2 Position the TCG switch at SET.

3 Use CURSOR buttons to set the user bits.



► button: Shifts the target (highlighted) digit to the right.
◄ button: Shifts the target (highlighted) digit to the left.
▲ button: Increases the highlighted number by one.
▼ button: Decreases the highlighted number by one.
SET button: Confirms the set user bits.
• Pressing the RESET button while setting the user bits will reset any user bit setting to 0.

4 Press the SET button to confirm the user bit value, and position the TCG switch at F-RUN or R-RUN.

◆ **NOTE**

Changing the TCG switch setting without pressing the SET button disables the set value.

5 Open the setting menu RECORDING SETUP screen and set the menu option UB MODE to USER.

Retaining the user bits

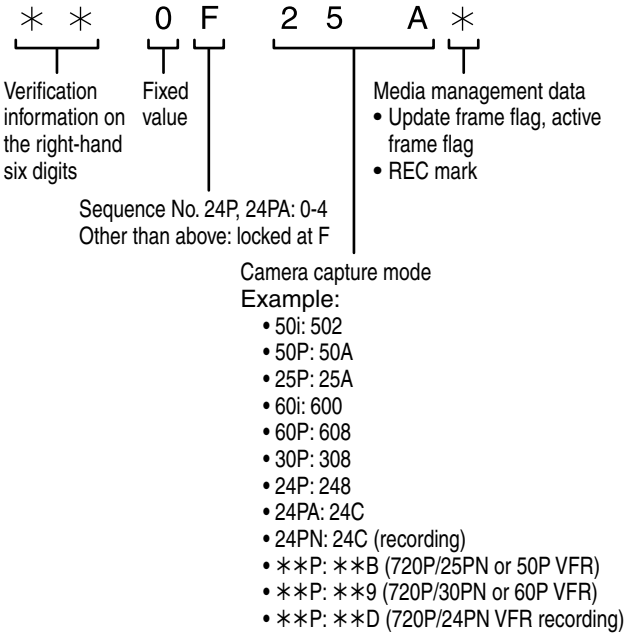
The data set for the user bits are automatically saved and retained even if the video camera-recorder is turned off.

Frame rate information recorded in user bits

The frame rate value of video data captured and recorded at a frame rate set in the menu option FRAME RATE or other options in the SYSTEM SETUP screen can be recorded in the user bits and be used in editing equipment (computer editing software).
This type of data is recorded in VITC UB at all times.
Setting the setting menu UB MODE to FRM RATE, records the information also to the user bits.
In playback of clips recorded in native mode, the same frame rate information as that obtained in playing back the user bits in the VIDEO AUX area is also output to the user bits in the subcode area.

■Frame rate information

Frame rate, video pull-down and time code user bits are related as described below.



1080i, 576i, 480i mode

Frame rate: 24P over 60i (2:3)

First field of updated frame rate

Time code digit

00	01	02	03	04	05	06	···	23	24	25	26	27	28	29

Video

Ao	Ae	Bo	Be	Bo	Ce	Co	De	Do	De	Ao	Ae	Bo	Be	···	Co	De	Do	De	Ao	Ae	Bo	Be	Bo	Ce	Co	De	Do	De

Sequence No.

0	1	2	3	4	0	1	···	3	4	0	1	2	3	4

Updated frame information

10	10	01	01	00	10	10	···	01	00	10	10	01	01	00

Frame rate: 24PA over 60i (2:3:3:2)

Time code digit

00	01	02	03	04	05	06	···	23	24	25	26	27	28	29

Video

Ao	Ae	Bo	Be	Bo	Ce	Co	Ce	Do	De	Ao	Ae	Bo	Be	···	Co	Ce	Do	De	Ao	Ae	Bo	Be	Bo	Ce	Co	Ce	Do	De

Sequence No.

0	1	2	3	4	0	1	···	3	4	0	1	2	3	4

Updated frame information

10	10	01	00	10	10	10	···	00	10	10	10	01	00	10

Frame rate: 25P over 50i (2:2)
30P over 60i (2:2)

Time code digit

00	01	02	···

Video

Ao	Ae	Bo	Be	Co	Ce	···

Updated frame information

10	10	10	···

720P mode

Frame rate: 24P over 60P (2:3)

Updated frame

Time code digit

00	01	02	03	04	05	06	···	23	24	25	26	27	28	29

Video

A	A	B	B	B	C	C	D	D	D	A	A	B	B	···	C	D	D	D	A	A	B	B	B	C	C	D	D	D

Updated frame information

10	10	01	01	00	10	10	···	01	00	10	10	01	01	00

Frame rate: 25P over 50P (2:2)
30P over 60P (2:2)

Time code digit

00	01	02	···

Video

A	A	B	B	C	C	···

Updated frame information

10	10	10	···

Setting the Time Code

1 Switch the menu option TC MODE on the RECORDING SETUP screen to DF or NDF using the menus. (In 59.94 Hz mode)

For details on menu operation, refer to [Using the menus] (page 125).

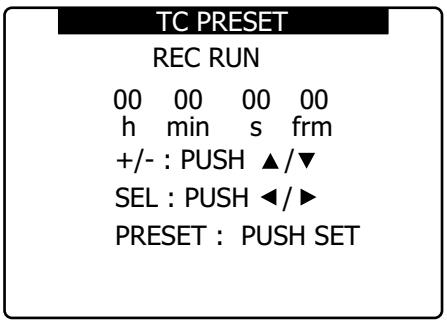
- Select DF to advance time code in drop frame mode and NDF in non-drop frame mode. Note that 24P, 24PA and 24PN are always recorded in NDF mode.

2 Use the COUNTER button to switch to time code display.

3 Position the TCG switch at SET.

4 Use the CURSOR buttons to set the time code.

- Range of available time code settings:
  00:00:00:00 to 23:59:59:24 (50i, 50P, 25P)
  00:00:00:00 to 23:59:59:29 (60i, 60P, 30P, 24P, 24PA)
  00:00:00:00~23:59:59:23 (24PN)



► button: Shifts the target (highlighted) digit to the right.
◄ button: Shifts the target (highlighted) digit to the left.
▲ button: Increases the highlighted number by one.
▼ button: Decreases the highlighted number by one.
SET button: Use to confirm set time code value.

- Pressing the RESET button will reset any time code setting to 0.

5 Press the SET button to confirm the time code setting, and use the TCG switch to select a time code.

- F-RUN steps the time code in free run mode, and R-RUN set it in recording run mode.

◆ **NOTE**

- **When 24P or 24PA is used, the time code is adjusted every 5 frames. It is adjusted to multiples of four for 24PN and to even numbers for 720/30PN. It is adjusted so that the seconds plus the frames are an even number for 720/25PN. The time code cannot be set during recording.**
- **The set value is not valid if you change the TCG switch position without pressing the SET button.**

Time code function during battery replacement

Even during battery replacement the backup mechanism keeps the time code generator functioning.

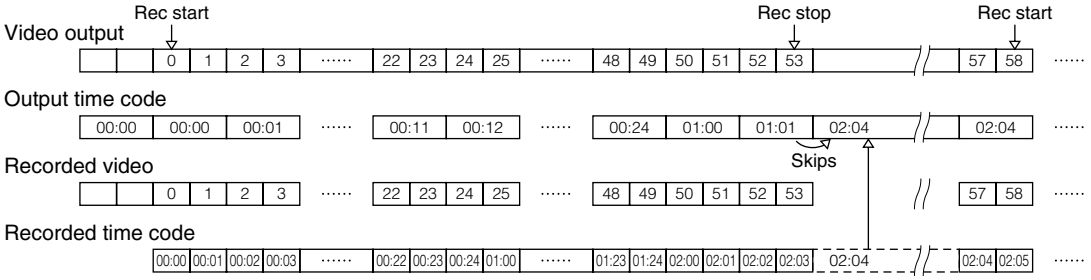
◆ **NOTE**

When the POWER switch has been switched ON → OFF → ON, the backup accuracy of the time code in free run mode is about ±2 frames.

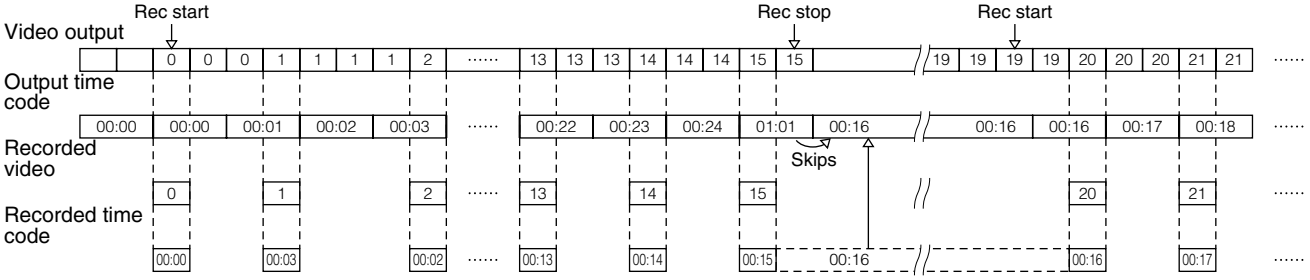
VFR (variable frame rate) time code

- At a frame rate (capture frame rate) of 25P the speed of recording and the output time code matches actual time, but not at any speed other than 25P. (Example: at 50P recording progresses at 50/25 speed)
- Then the camera operates in Rec Run mode and the time code output at start of recording matches the recording time code.
- This is true also for frame rates other than 30P capture in 30PN mode and 24P capture in 24PN mode.

25PN recording at 50P capture



25PN recording at 15P capture



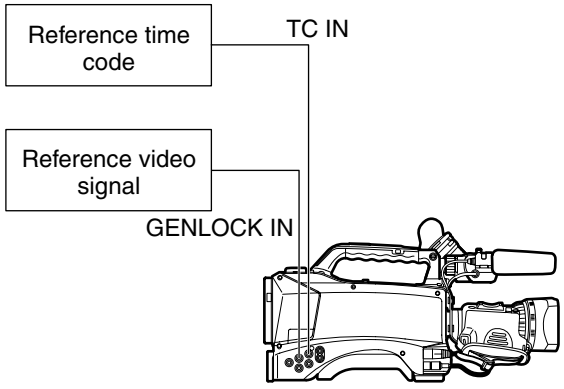
Externally Locking the Time Code

The time code generator built into your AG-HPX301E may be locked to an external generator. It is also possible to lock an external time code generator to the internal generator.

Connections for externally locking the time code (examples)

As illustrated, both the reference video signals and the time code must be input.

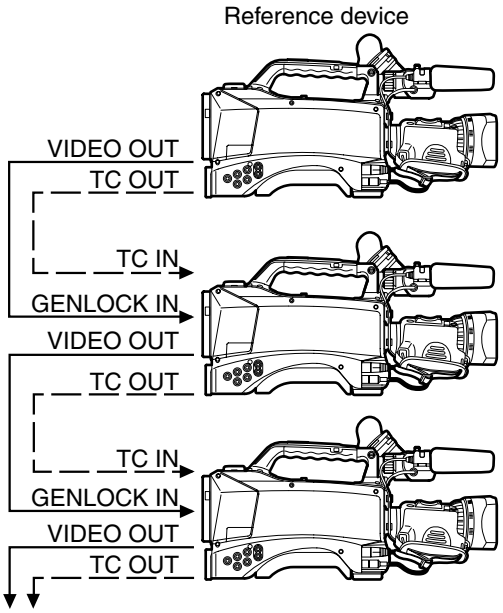
■Example 1: Locking the time code to external signals



◆ NOTE

- **In addition to an HD Y reference signal, a composite video signal can also be input as reference signal.**
- **Input composite video signals when the system mode is 576i (480i) (SD) and 720P.**
- **During HD-Y signal input in 720P system mode, GENLOCK input for the video signal is applied but the time code is delayed by 1 field.**
- **If the reference GENLOCK input signal becomes irregular and recording cannot be normally performed, "TEMPORARY PAUSE IRREGULAR FRM SIG" blinks in red in the viewfinder and on the LCD screen and the current clip is divided. The continuity of the time code cannot be guaranteed. Recording resumes when the signal returns to normal. Recording will not resume if interval, one-shot or loop recording is in progress.**

■Example 2: Connecting two or more AG-HPX301Es with one another, with one being used as the reference device.



◆ NOTE

- **Set the menu option TC VIDEO SYNCHRO to TC IN in the OUTPUT SEL screen and the menu option GL PHASE to COMPOSITE in the OTHER FUNCTIONS screen on both units.**
- **Setting TC VIDEO SYNCHRO in the OUTPUT SEL screen to TC IN will supply the time code via TC IN to the next slave device without delay.**
- **The subcarrier in the VBS signal of the VIDEO OUT connector of the camera cannot be externally locked.**

To externally lock the time code

Follow the steps below.

1 Turn on the POWER switch.

2 Position the TCG switch at [F-RUN].

3 Set the COUNTER button to TC.

4 Supply a phase-relationship reference time code (that conforms to the time code requirements) and reference video signals to the TC IN and GENLOCK IN connectors, respectively.

- Now the built-in time code generator is locked to the reference time code.
- When locked to an external time code generator, the time code is at all times locked to the external time code, which is displayed as a highlighted value on the counter indicator. Do not engage the recording mode during the few seconds it takes for the sync generator to stabilize.
- Once a slave relationship is established, the TC IN and GENLOCK IN connectors stay in slave status.*
  Note that the following events release slave status.
  - When TC PRESET is performed
  - When the REC SIGNAL option in the SYSTEM SETUP screen is set to 1394.
  - The power is turned off
  - The time code mode is switched
  - The TCG switch is set to R-RUN
  - When REC FORMAT and CAMERA MODE have been switched

  * The slave function locks the time code to the TC IN input and the device will use this time code even if time code input should subsequently cease.

Setting the user bits when the time code is externally locked

To externally lock user bits, set the setting menu UB MODE (RECORDING SETUP screen) to EXT.
Regardless of an F-RUN or R-RUN setting of the TCG switch, the time code is slaved to user bit values input to the TC IN connector.
For details, refer to [Setting Time Data] (page 60) and [Setting user bits] (page 63).

To unlock the externally locked time code

Discontinue external time code supply, then position the TCG switch at [R-RUN].

Cautions in switching the power source from battery to external power supply

Connect the DC IN socket with the external power supply before removing the battery, in order to keep the time code generator energized. If the battery is removed first, there is no guarantee that the time code will stay externally locked.

External synchronisation of the camera when the time code is externally locked

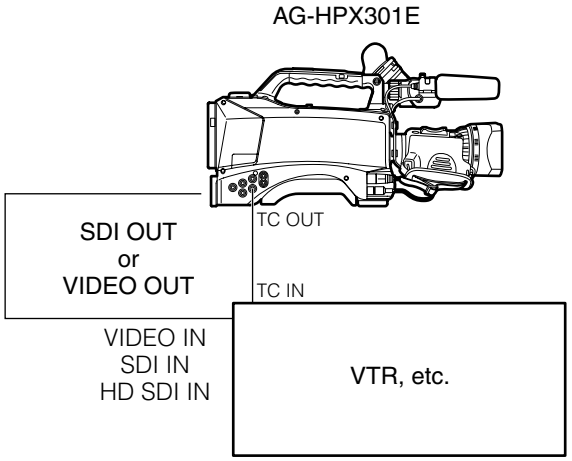
When the time code is externally locked, the reference video signals input through the GENLOCK IN connector gen-lock the camera.

◆ **NOTE**

- **To lock other devices externally to the AG-HPX301E, as the master device, make sure that the other devices are in the same camera mode as the AG-HPX301E. Note that if some of the connected devices use interlaced scanning while other devices use progressive scanning, there may be breaks in the video and time code.**
- **When 24P, 24PA or 24PN (native) is selected and the time code is externally locked, be sure to select a non-drop frame time code. The time code cannot be externally locked when drop frame mode is selected. When the time code is externally locked, the video may be distorted, but this is because of adjustment to 5-frame segments and not a malfunction.**

Outputting the time code externally

To output time code from the camera's TC OUT connector to a VTR or other recording device in sync with camera picture or playback picture, set the setting menu TC VIDEO SYNCRO (OUTPUT SEL) to VIDEO OUT.
Set the menu option GL SELECT to SDI or COMPOSITE as required by supplied video output in the OTHER FUNCTIONS screen and the menu option TC OUT to TCG/TCR in the OUTPUT SEL screen.



◆ **NOTE**

When the setting menu TC VIDEO SYNCRO is set to VIDEO OUT, the time code is output via TC OUT in tune with VIDEO OUT delay.

GENLOCK and time code input/output connection and setup

Camera operating conditions			Camera setup	GENLOCK input and camera output phase (In phase: ○ Out of phase: ×)		
Recording format	**Video and reference signal to be output externally**	**GENLOCK input**	**GL PHASE**	**SDI OUT (HD)**	**VIDEO OUT, SDI OUT (SD)**	**TC OUT**
1080i	SDI OUT (1080i)	1080i	SDI	○	90H delay	○
	VIDEO OUT		COMPOSITE	90H advance	○	○
	SDI OUT (1080i)	SD (576i (480i))	SDI	○	90H delay	○
	VIDEO OUT		COMPOSITE	90H advance	○	○
720P	SDI OUT (720P)	720P	SDI	○	120H delay	×
	VIDEO OUT		COMPOSITE	120H advance	○	×
	SDI OUT (720P)	SD (576i (480i))	SDI	○	120H delay	○
	VIDEO OUT		COMPOSITE	120H advance	○	○
576i (480i)	SDI OUT (576i (480i))	SD (576i (480i))	Disabled	No output	○	○
	VIDEO OUT					

Counter Setting and Display

Pressing the COUNTER button to view the counter displays the counter value on the time code indicator in the LCD and in the viewfinder. The counter value is indicated in “Hour : Minute : Second” format. The counter value is not displayed during playback.

The menu option REC COUNTER in the DISPLAY SETUP screen can be set to display two types of counters.

TOTAL: provides a continuous count until reset by pressing the COUNTER RESET button. The counter value is retained when P2 cards are replaced and when the power is turned off.

CLIP: The counter is reset to 0 at the start of each recording and allows you to keep track of clip recording time while shooting the current clip.

◆ **NOTE**

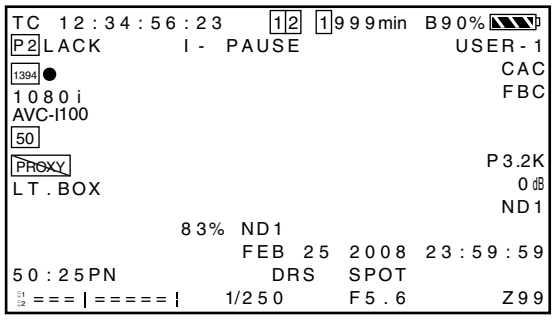
- **Pressing the RESET button when the counter value is displayed resets the counter to 0.**
- **The counter value indicates values in the range between 0:00:00 and 9:59:59 in 1-second steps.**

Viewfinder Screen Status Displays

In addition to video, the viewfinder shows messages indicating camera settings and operating status, center markers, safety zone markers, zebra patterns and other indications.

Viewfinder Status Indication Layout

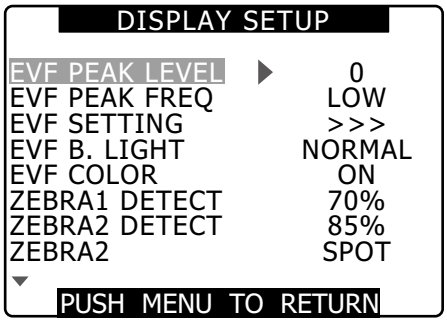
The illustration below shows the indications (except MODE CHECK) that are displayed in the viewfinder.



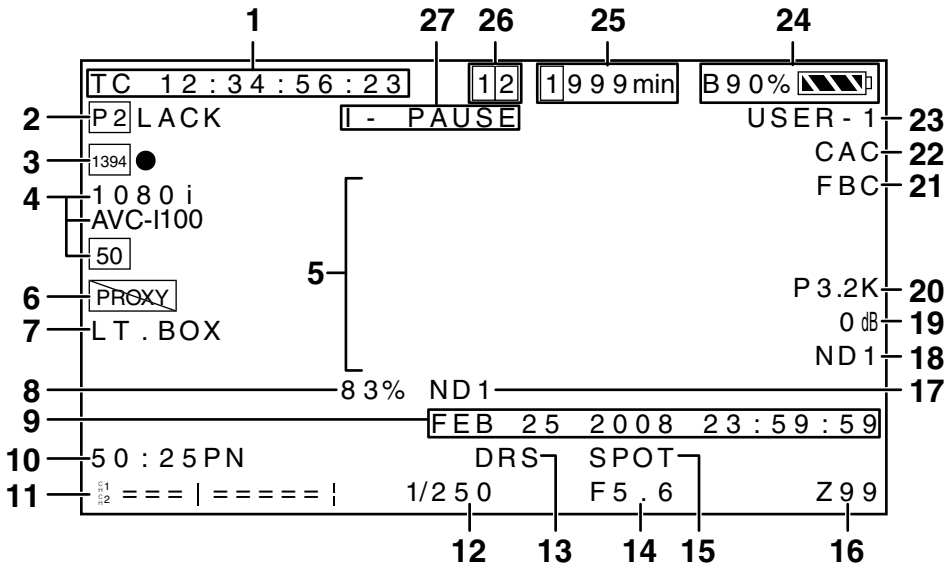
For more information, see the following pages:

Selecting Viewfinder Display Information

To select items in the viewfinder screen, open the DISPLAY SETUP screen and turn on or off each item or type.
Refer to the section [Using the menus] (page 125).



Screen displays



1 Time code displays

Each press of the COUNTER button displays (or turns off) the indications listed below.

- **(No indication)**
- **Counter:** Counter value (during recording only)
- **TC:** Time code value
  TC* is indicated when the time code value cannot be correctly read from DVCPRO/DV connector input.
  The colon between the seconds and the frames changes to a period (.) in drop frame mode.
- **tc:** Time code value (frame digits are indicated in 24 frames)
  tc* is indicated when the time code value cannot be correctly read from DVCPRO/DV connector input.
  The colon between the seconds and the frames changes to a period (.) in drop frame mode.
- **UB:** User bit values
  UB* is indicated when the user bit value cannot be correctly read from DVCPRO/DV connector input.
- **FR:** Frame rate information for recording
  - FR50I: 50i interlace mode (50 fields/s)
  - FR50P: 50P progressive mode (50 frames/s)
  - FR25P: 25P progressive mode (25 frames/s)
  - FR60I: 60i interlace mode (60 fields/s)
  - FR60P: 60P progressive mode (60 frames/s)
  - FR30P: 30P progressive mode (30 frames/s)
  - FR24P*: 24P progressive mode (24 frames/s)
  - FR24PA*: 24P advanced mode (24 frames/s)

  * In FR24P and FR24PA modes, the last digit contains the frame conversion sequence information.

◆ **NOTE**

When TC, tc and UB are locked to TC IN input, the characters in their icons change to outline characters TC → TC .
When the HOLD button is used to temporarily freeze indications, the HOLD indication blinks.

2 Warnings

- **P2 :** Blinks when no P2 card is inserted or the card is write protected.
- **P2 FULL:** Blinks when there is no more space left on the P2 card.
- **P2 LACK:** Blinks in loop rec mode when there is not enough space left on the P2 card.
- **:** Lights when the battery for the internal clock is depleted.
  For details, refer to [Charging the internal battery] (page 156).

3 Backup unit displays

- The following indications show the status of backup units connected to the DVCPRO/DV connector.
- The following indications are not displayed when the menu option 1394 CONTROL in the OTHER FUNCTIONS screen is set to OFF.
  - **1394 ●:** Recording
  - **1394 ❚❚:** Recording standby
  - **1394 ⊠:** The backup unit cannot be controlled.
  - **1394:** No backup unit is connected.
  - **1394––:** A backup unit is connected but is not in recording or recording standby status.

4 Recording format and system frequency indication

- **System mode**
  - 1080i
  - 720P
  - 576i (480i)
- **Recording format**

  (In 1080i, 720P system mode)
  - AVC-I 100: AVC-Intra 100 format
  - AVC-I 50: AVC-Intra 50 format
  - DVCPRO HD: DVCPRO HD format

  (in 576 (480i) system mode)
  - DVCPRO50, DVCPRO, DV
- **System frequency**
  - 50 : 50 Hz
  - 60 : 59.94 Hz

5 Information display

The following information is displayed depending on the situation.

- Performance of auto white balance and auto black balance
- Warning and error indication
- Information on switch and button operations

For details, refer to [Center Information Display] (page 74).

6 Proxy information display (optional)

This display provides information on proxy card errors and time remaining in proxy recording on an SD memory card.

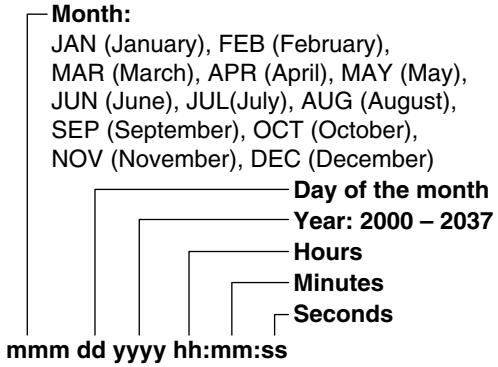
7 Letter box recording display

This display appears in the 576i (480i) recording format when LETTER BOX is selected in the menu option ASPECT CONV in the SYSTEM SETUP screen.

8 Y GET brightness display

When the Y GET function is used, the image level at the center of the image is indicated in a range between 0% and 109%

9 Calendar



10 Recording/playback frame rate display

In native recording, the capture frame rate and recording and playback frame rates are displayed.

Example: 50:25PN (recording 50P with the camera frame rate set to a variable frame rate of 25PN)

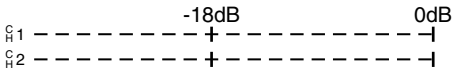
Playback applies a 2:2 pull-down to perform 25P over 50P, indicating that 25/50 speed slow playback is performed.

In standard recording only the capture frame rate is indicated.

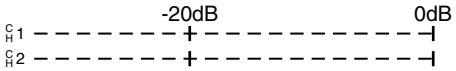
Example: 25P (recording 25P using 2:2 pulldown for over 50i recording)

11 Audio level meter display

HEAD ROOM at -18 dB



HEAD ROOM at -20 dB



By assigning MAG A. LVL (level meter magnification) to a user button makes it possible to switch to display magnification.

For details, refer to [Audio level meter magnification] (page 78).

12 Shutter speed

The shutter speed is displayed here.

In synchro scan mode, the display (time (minutes) display or shutter angle icon display) made in the menu option SYNC SCAN DISP in the DISPLAY SETUP screen is used.

13 DRS display

This indicates operation of the dynamic range stretcher function.

14 Iris display

Displays F values.

- NC appears when the lens connector is not connected.

15 Auto-iris control displays

- **SPOT:** Auto iris control for spot light
- **BACK:** Auto iris control for backlight compensation

This indication also appears when the lens is set to manual iris, but is not active.

16 Zoom position display

Zoom positions are indicated in a range from Z00 (maximum wide angle) to Z99 (maximum zoom).

17 Recommended ND filter display

This indicates the most suitable ND filter to use under current shooting conditions.

18 ND filter display

- This indicates the selected ND filter.
- An ND -- indication means that the ND FILTER switch is incorrectly set (a position other than ND1 to ND4). Check ND FILTER switch position.

19 Gain display

Indicates the gain value set using the video amplifier.

20 WHITE BAL switch position indication

Indicates the currently selected switch position and also white balance operation when AWB is preset. In ATW (Auto Tracking White Balance) mode, ATW is also indicated and LOCK is displayed when the function is locked.

21 FBC indication

Appears when the FBC function is engaged.

22 CAC indicator

Indicates that the chromatic aberration function of the lens is operating.

23 Scene file name display

Indicates the name of currently selected SCENE FILE (F1 to F6).

24 Remaining battery charge

As the remaining battery charge drops, the display changes as follows: → → → → .

When the battery is completely discharged, ( ) blinks.

(When the AC adapter is being used, a display other than may appear: this is not a sign of malfunctioning.)

Batteries that indicate battery level in % (percent)

Such batteries indicate remaining battery level as follows.

- **B∗∗%:** 10%~99%
  Indicates the remaining battery level in %.
- **MAX:** Indicates that the battery is fully charged.
- **EMP:** Indicates that the remaining battery level is less than 10%.

Batteries that do not indicate capacity in % (percent)

Such batteries indicate the battery level in voltages.

- **13.5 V:** Indication of current battery voltage.

25 Media remaining memory display

- Set the menu option P2CARD REMAIN in the DISPLAY SETUP screen to ONE-CARD to display the remaining time on the P2 card being recorded and show the number of the slot it resides in on the left. TOTAL displays the remaining time on both cards.
- In a mode check, ONE-CARD and TOTAL are alternately displayed.
- This display does not appear while remaining memory is calculated and when the camera is in USB device mode.
- A mode check during loop recording displays the standard recording time available to loop recording.
- Indicates remaining time in 1-minute increments from 0 to 999 minutes. 999 minutes and longer time periods are also indicated as 999 minutes.
- The display blinks when 2 minutes or less time is left.

26 Media information display

Indicates the slots that contain P2 cards and general information on the media.

- **1 On:**
  P2 card ready for recording
- **1 lights green:**
  P2 card selected for recording
- **1 flashes:**
  The card is being recognized
- **- :** No card inserted
- **P :** Write-protected
- **F :** Full
- **X :** Cannot recognize
- **E :** P2 card in an invalid format (formatting will take care of this problem)
- **o :** P2 card slot contains a PROXY card.

27 Recording and playback

- **REC:** Recording
- **PAUSE:**
  Recording standby
- **❚❚ :** Playback pause
- **▶ :** Play
- **▶▶ (◀◀) :**
  Fast-forward/fast-forward playback (fast-reverse/fast-reverse playback)
- **4X ▶▶ (4X ◀◀) :**
  4x speed search
- **CLIP ❚❚▶ (CLIP ❚❚◀) :**
  Clip forward (clip reverse), cue up of single clips

In DISPLAY OFF, only REC display is shown at top right. (Also displayed at top right, when pre-recording, interval recording or one-shot recording is set.)

Special recording display

This display appears when the menu option REC FUNCTION in the RECORDING SETUP screen is set to INTERVAL, ONE SHOT or LOOP and when PRE REC is set to ON.

- L – : LOOP (loop recording)
- I – : INTERVAL, ONE SHOT
- P – : PRE REC

Center Information Display

The following information displays (for details, refer to page 72) are provided.

P2 card recording and playback data indications

• BOS
Beginning of stream. No more data is available in the rearward playback direction.
• CANNOT PLAY
Appears when playback is disabled.
• CARD ERR (1) (2) (1/2) :
The number identifies the P2 card that is giving trouble.
• UPDATING: Reading card data
• CANNOT REC
Appears when recording cannot be started by pressing the REC button.
• EOS
End of stream. No more data is available in the forward playback direction.
• PRE REC ON (OFF) (INVALID)
Appears when the user button to which pre-recording has been assigned is pressed.
• SHOT MARK ON (OFF) (INVALID)
SHOT MARK appears when the user button or the lens RET button to which it has been assigned is pressed.
• SLOT SEL (INVALID)
Appears when pressing the user button to which SLOT SEL is assigned.
• TEXTMEMO (INVALID)
TEXT MEMO appears when the user button or the lens RET button to which it has been assigned is pressed.

Errors and warnings

Errors and warnings appear when something goes wrong with the camera or a P2 card malfunctions. If the problem cannot be solved by turning off the camera and turning it back on, try replacing the card and if that does not help, it may be necessary to consult your supplier.

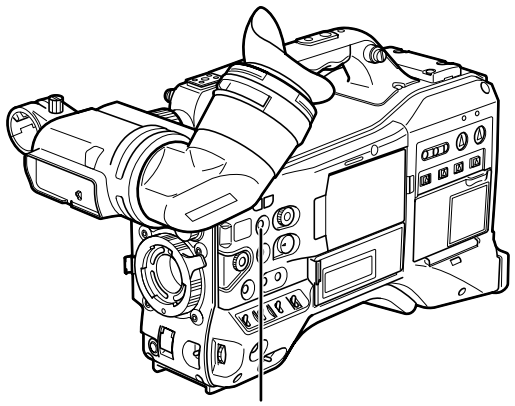
• 1394
This error occurs in a 1394 connection or when signal faults occur.
• 1394 INITIAL ERROR: a connection error
• 1394 INPUT ERROR: an input error
• 1394 INPUT ERROR (OTHER FORMAT):
(different input format)
• COPY INHIBITED:
This indicates that a copy-guarded signal entered DV format input from the DVCPRO/DV connector.
• DIR ENTRY NG CARD
This message indicates that the directory on the card has become corrupted and that normal recording cannot be guaranteed if operation continues. Make a quick backup of card data and reformat the card.
• EXTERNAL1394 DISCONNECT
This message appears when the menu option 1394 CONTROL in the OTHER FUNCTIONS screen is set to EXT and recording is attempted without connecting an external device to the DVCPRO/DV connector.
• FORMAT ERR !
This indicates a P2 card that does not meet the P2 card standard
• INCOMPATIBLE CARD
This message indicates that the inserted card does not meet required standards and cannot be used.
It may also appear when a proxy card is inserted when the power is on.
• LOW BATTERY
This message indicates that the battery is depleted.
• REC WARNING
This is displayed during a recording error. Do the recording over. If this does not solve the problem, consult your supplier.
• CARD ERR (1) (2) (1/2): The number indicates the P2 card that is giving trouble.
• Turn the power off if the warning continues.
• If the warning persists after rerecording, replace the card with another card.
• ERROR: Other causes (This indicates that an attempt was made to record 1000 or more clips on one card, for example.)
• PULL DOWN ERROR: Video pull-down sequence error in a mode such as 25P
• REC RAM OVERFLOW: Overflow of recording memory
• RUN DOWN CARD
This message indicates that a P2 card has been overwritten the maximum number of times and that normal recording cannot be guaranteed if operation continues.
It is best to replace such P2 cards with a new card.
• SYSTEM ERROR
This message indicates that a system error has occurred. This type of error can often be corrected by turning off the power and turning it back on again.
• CAM MICON ERROR: The microprocessor in the camera is not responding.
• P2 CONTROL ERROR: a P2 control error has occurred.
• P2 MICON ERROR: The P2 microprocessor does not respond
• TEMPORARY PAUSE
IRREGULAR FRM SIG:
This message indicates that input GENLOCK reference signal is irregular and that recording has been terminated.
• TURN POWER OFF
This message indicates that an abnormal event has occurred, for example, that a card was removed during access or that a system mode change was made.
Turn the power off and then turn it back on again.
• WIRELESS RF
This message indicates that reception from the wireless receiver is poor.

Camera status display

- ABB
  ABB indicator
- ATW ACTIVE
  Appears when the AUTO W/B BAL switch is set to AWB and ATW is running.
- ATW (ATW LOCK)
  Appears when the WHITE BAL switch is set to B and ATW has been assigned.
- AUTO KNEE (ON/OFF)
  Displayed when changing the AUTO KNEE switch position.
- AWB
  AWB indicator
- AWB P3.2K/AWB P5.6K
  Displays the color temperature assigned to PRST when the WHITE BAL switch is set to PRST. Also displayed when AWB is performed in the PRST position.
- BACK LIGHT (OFF)
  Displayed during iris control when back light status is changed by pressing the user button to which BACK LIGHT is assigned.
- DRS ON (OFF)
  Displayed when DRS operation has been changed.
- GAIN**dB
  Displayed when GAIN is switched.
- ND NG
  Displayed when the ND filter is not positioned correctly.
- SCENE******
  Displays the name of a scene file selected by turning the SCENE FILE dial.
- SHUTTER 1/**** (OFF)
  Displayed when the shutter speed is changed.
- SPOT LIGHT (OFF)
  Displayed during iris control when back light status is changed by pressing the user button to which SPOT LIGHT is assigned.
- FBC ON (OFF)
  Displayed when FBC operation has been changed.

Checking and displaying shooting status

- Hold down the DISP/MODE CHK button in recording standby or during recording to display the settings of each shooting function, the list of functions assigned to USER buttons and all other information. Release the button to return to the regular screen.
- Press the DISP/MODE CHK button during recording standby or recording clears all displays. Press again to return to the regular display.
- These settings are maintained when the unit is turned off and also when switching media and operating mode.
- The following items can be displayed in the viewfinder and on the LCD monitor by pressing the DISPMODE CHK button or by configuring the menu option OTHER DISPLAY in the DISPLAY SETUP screen.



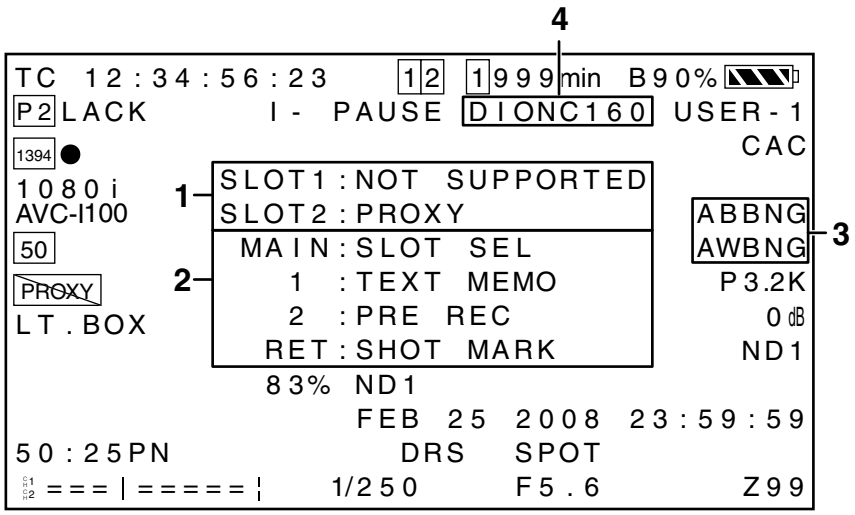
DISP/MODE CHK button

No	Displays	Displays that MODE CHECK brings up ○	Displays that DISPLAY OFF clears ○	Displays opened or hidden by settings in the OTHER DISPLAY option –: Not affected, ○: Opens, ×: Clears			Other menus that clear displays –: Not affected
				ALL	PARTIAL	OFF	
1	Time code displays	○	Is not cleared	–	–	–	–
2	Warnings	○	Is not cleared	–	–	–	CARD/BATT *1
3	Backup unit displays	○	Is not cleared	–	–	–	–
4	Recording format and system frequency indication	○	○	○	×	×	–
5	Information display	×	Is not cleared	–	–	–	–
6	Proxy information display (optional)	○	Is not cleared	–	–	–	–
7	Letter box recording display	○	○	–	–	–	–
8	Y GET brightness display	○	Is not cleared	–	–	–	–
9	Calendar	○	○	–	–	–	Date/Time
10	Recording/playback frame rate display	○	○	○	○	×	–
11	Audio level meter display	○	○	–	–	–	LEVEL METER
12	Shutter speed	○	○	○	○	×	–
13	DRS display	○	○	○	○	×	–
14	Iris display	○	○	○	○	×	–
15	Auto-iris control displays	○	○	○	○	×	–
16	Zoom position display	○	○	–	–	–	Zoom
17	Recommended ND filter display	○	○	○	○	×	–
18	ND filter display	○	○	○	×	×	–
19	Gain display	○	○	○	○ Does not indicate 0 dB	×	–
20	WHITE BAL switch position indication	○	○	○	○ Displays only ATW. LOCK, P3.2K and P5.6K	×	–
21	FBC indication	○	○	○	○	×	–
22	CAC indicator	○	○	–	–	–	–
23	Scene file name display	○	○	○	×	×	–
24	Remaining battery charge	○	○ Goes on when battery charge drops	–	–	–	CARD/BATT
25	Media remaining memory display	○	○ Goes on when battery charge drops	–	–	–	CARD/BATT
26	Media information display	○	○ Lights when SLOT SEL is performed	○	○	× Lights when SLOT SEL is performed	CARD/BATT
27	Recording and playback	○	○ Appears at top right only during recording and in special recording modes	○	○	× Appears at top right only during recording and in special recording modes	–

*1 Only the warning that a P2 card has not been inserted is not displayed.

MODE CHECK indication

MODE CHECK provides an almost complete set of camera information.
Items 1 to 4 below are provided only by MODE CHECK.



1 P2 card slot status display

Displays status for P2 card slots 1 and 2.

- **ACTIVE:**
  Indicates cards that are ready for read and write operations (includes cards selected for recording)
- **ACCESSING:**
  Indicates a card that is currently read or being written to
- **INFO READING:**
  Card in the recognition phase
- **FULL:**
  No more space available on the P2 card
- **PROTECTED:**
  The P2 card is write-protected.
- **NOT SUPPORTED:**
  The P2 card cannot be used or recognized.
- **FORMAT ERROR:**
  The P2 card is not properly formatted.
- **NO CARD:**
  No card has been inserted.
- **PROXY: (optional)**
  Proxy card
- **No indication:**
  The camera is in the USB DEVICE mode

2 Information on user button and lens RET button assignment

Information to check what functions are assigned to user buttons and the lens RET button are provided in the following sections.

For details, refer to [Assigning functions to USER buttons] (page 57).
For details, refer to [RET SW] (page 134).

3 AWB, ABB error display

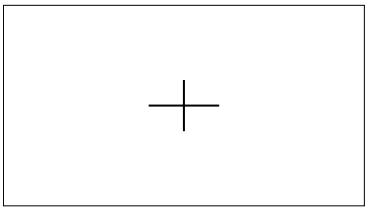
A mode check indicates when AWB and ABB fail to operate normally.

4 Battery type

This indicates the battery type selected for detection of remaining battery charge.

Center marker display

A center marker is displayed when the menu option MARKER in the DISPLAY SETUP screen is set to ON.



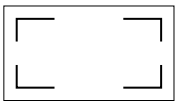
◆ **NOTE**

The center marker display appears only on the LCD monitor and in the viewfinder. It is not superimposed on signals output via the VIDEO OUT and SDI OUT connectors.

Safety zone markers

A safety zone marker is displayed when the menu option SAFETY ZONE is selected in the DISPLAY SETUP screen.

- OFF: Not displayed
- 90%: indicates the display area on a normal household TV



- 4:3: Indicates display area available at a 4:3 aspect ratio.



- 13:9: Indicates the display area available at a 13:9 aspect ratio.



- 14:9: Indicates the display area available at a 14:9 aspect ratio.

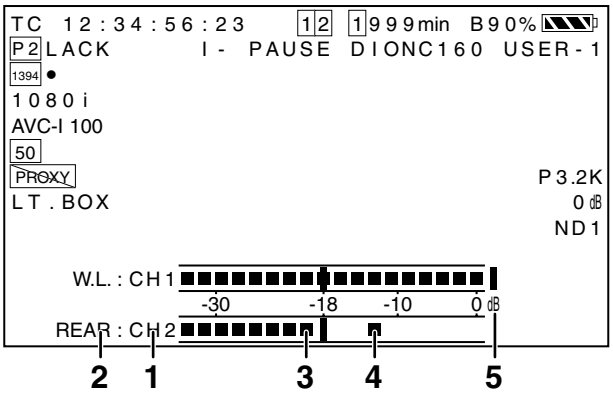


◆ **NOTE**

- **The safety zone is not displayed when 4:3, 13:9 or 14:9 is selected when SYSTEM MODE is set to 576-50i (480-59.94i) and ASPECT CONV is set to SIDE CROP or LETTER BOX.**
- **Safety zone markers appear only on the LCD monitor and in the viewfinder. They are not superimposed on signals output via the VIDEO OUT and SDI OUT connectors.**

Audio level meter magnification

Press the user button to which MAG A. LVL has been assigned to display a magnification of the audio level meter (available also when LEVEL METER in the DISPLAY SETUP menu is set to OFF).
Press the button again to return to normal audio level meter size.
Turning on MODE CHECK during audio level meter magnification clears the audio level meter display. After MODE CHECK use, the audio level meter reappears at normal size.



1 Channel display
This displays the currently monitored audio channel.

2 Input system display
This displays the audio input system (AUDIO IN switch).
- FRONT
- W.L. (WIRELESS)
- REAR

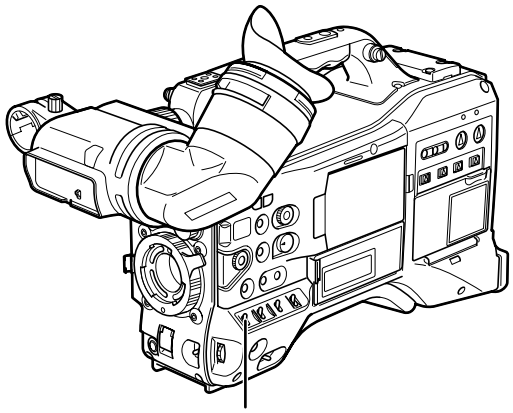
3 Standard level bar
This bar indicates a -18 dB or -20 dB headroom level depending on the menu option HEADROOM setting in the AUDIO SETUP menu.

4 Peak hold display
Holds the audio peak level indication for 1 second.

5 Excessive level indicator
An audio level that is set too high is indicated in red.

Zebra pattern display

The AG-HPX301E can display two zebra patterns. Turning the ZEBRA switch on displays the zebra pattern set in the menu in the viewfinder and LCD monitor. A menu setting makes it possible to also display the zebra pattern on video output via the VIDEO OUT connector.

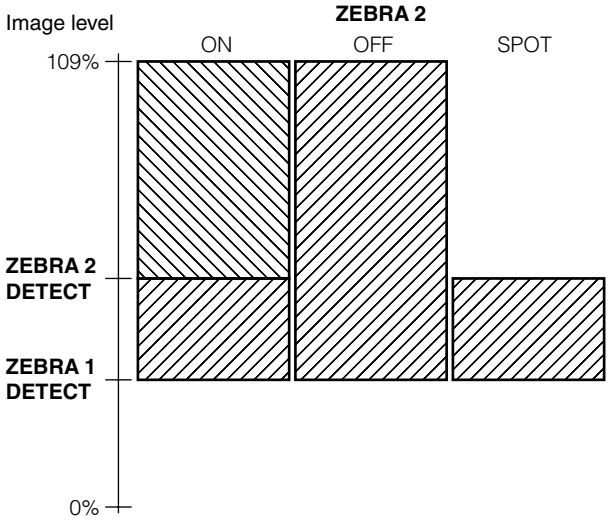


Use the DISPLAY SETUP screen to set the level of zebra pattern display.

Item	Setting	Description
ZEBRA1 DETECT	50%…<u>70%</u>…109%	Sets the level of the right-leaning zebra pattern 1.
ZEBRA2 DETECT	50%…<u>85%</u>…109%	Sets the level of the left-leaning zebra pattern 2.
ZEBRA2	ON, <u>SPOT</u>, OFF	Selects the ZEBRA2 type.

Underlined values indicate factory defaults.

SPOT: A video level between ZEBRA1 and ZEBRA2 displays a zebra pattern.



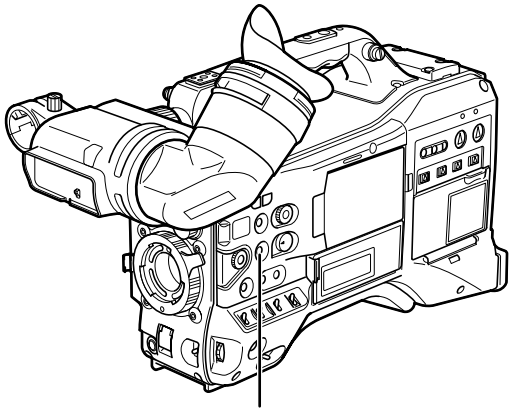
To display a zebra pattern on video output via the VIDEO OUT connector, make the required settings in the OUTPUT SEL screen.

OUTPUTSEL screen

Item	Setting	Description
VIDEO OUT ZEBRA	ON: Displays the zebra pattern shown on the LCD monitor and viewfinder of this camera also in video output via the VIDEO OUT connector. OFF: The zebra pattern is not displayed in video output from the VIDEO OUT connector.	Specifies whether or not the zebra pattern is superimposed on VIDEO OUT signals.

Focus assist function

Pressing the FOCUS ASSIST button magnifies the image at the center to facilitate focusing.
Set the menu option FOCUS BAR to ON in the DISPLAY SET UP screen to display the FOCUS BAR.



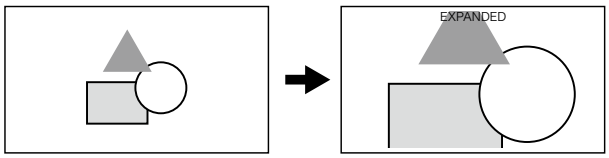
FOCUS ASSIST button

◆ **NOTE**

This function magnifies only the image at the center of the LCD monitor and viewfinder. It is not superimposed on signals output via the VIDEO OUT and SDI OUT connectors.

EXPANDED: (FOCUS ASSIST button)

Trebles the size of the center of the image.
The status indication and the zebra pattern disappears and EXPANDED appears at the top of the screen.



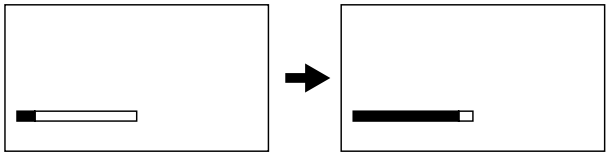
- The EXPANDED display is available only during recording and does not work in external input mode.

◆ **NOTE**

In VIDEO OUT and SDI OUT, the center of the image is not magnified and status indications do not appear.

FOCUS BAR: (DISPLAY SETUP menu)

The length of the bar indicates whether the image is in focus.
The FOCUS BAR extends to the far right when the image is in focus.



Out of focus

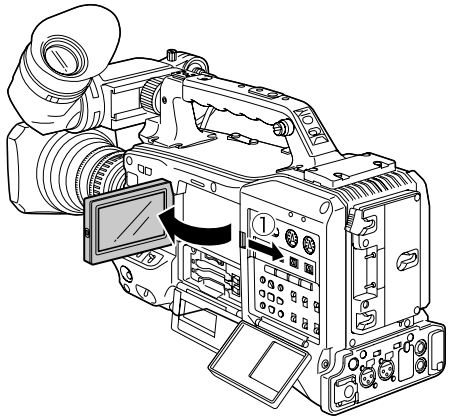
The bar extends to the right when the image is in focus.

Adjusting and setting the LCD monitor

Using the LCD Monitor

1 Turn on the POWER switch of the AG-HPX301E.

2 Slide the OPEN button in the arrow ① direction to open the LCD monitor.



◆ **NOTE**

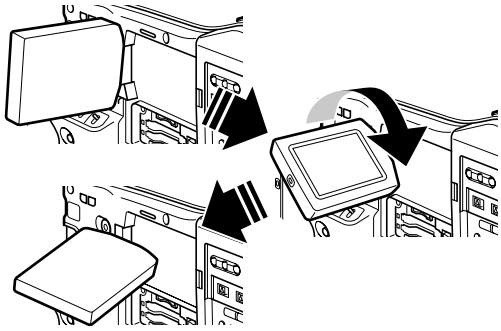
The LCD monitor opens to an angle of 120 degrees. Attempts to open it further will damage the monitor.

3 Adjust the angle of the LCD monitor for most convenient viewing.

- The monitor can turn up to 180 degrees towards the lens and up to 90 degrees towards you.

◆ **NOTE**

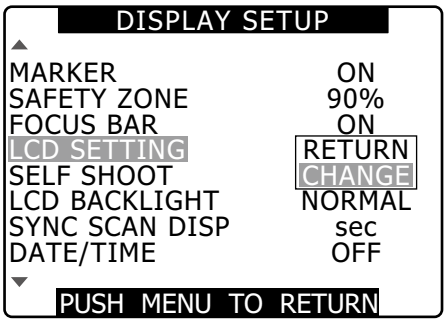
To prevent camera-recorder failure, do not use force when adjusting the monitor (when open).



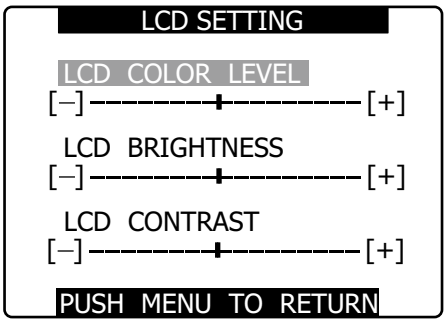
4 Use the subscreen in the menu option LCD SETTING in the DISPLAY SETUP screen to adjust screen color level, brightness and contrast.

For details on menu operation, refer to [Using the menus] (page 125).

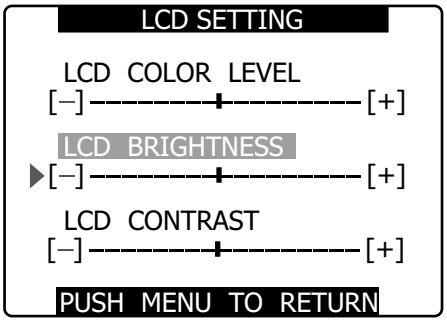
- At LCD SETTING of the DISPLAY SETUP screen, select CHANGE.



5 Use the JOG dial button to select an item.



6 Press the JOG dial button, and turn the JOG dial button to adjust the selected item.



◆ **NOTE**

- **Pressing the RESET button when a value that can be adjusted is selected in the setting menu LCD SETTING will return the setting to its factory default.**
- **When closing the LCD monitor make sure that it is shut tight.**
- **In an environment with sudden temperature changes, condensation may form on the liquid crystal surface of the monitor. If this happens, wipe off the moisture with a soft, dry cloth.**

- **When a cloth is used to wipe dew or dirt off the LCD monitor, discoloration may appear on the screen. This is not a malfunction. The discoloration disappears in a few minutes.**
- **When the camera-recorder is very cold, the video image in the LCD monitor will appear slightly darker immediately after the power is turned on. Once the interior of the camera-recorder warms up, the LCD monitor delivers normal brightness.**
- **The image on the LCD monitor may remain if the battery or the power plug of an external DC power supply is removed when the camera is on. This is normal and not a malfunction. This image will disappear if the camera is left idle.**
- **Image lag may increase at low temperatures, but this is not a malfunction.**

Self-portrait Shooting

When shooting with the LCD display angled 180 degrees towards the lens, you can set the menu option SELF SHOOT to MIRROR, to horizontally flip the video image on the LCD display, and allow you to view a mirror image while shooting.
Note that only the video image on the LCD monitor is horizontally flipped, not the actual video being recorded. This function clears any status display, waveform and vectorscope display on the LCD monitor. Setting menus and thumbnail displays are not flipped horizontally.

Waveform monitor function

Assign the WFM function to a user button and press that user button to display a waveform for an image in the LCD monitor. Another press of the WFM button closes the waveform display.

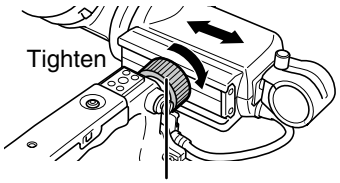
- The menu option WFM (page 134) in the SW MODE screen allows you to switch between the waveform and vectorscope displays.
- The waveform display does not appear in the viewfinder.
- The waveform display does not appear when the focus assist (EXPANDED) function is used.
- The waveform display cannot be recorded.

Adjusting and Setting up the Viewfinder

Adjusting Right and Left Viewfinder Position

1 Loosen the viewfinder left-right positioning rings.

2 Slide the viewfinder right and left to find a position that facilitates viewing.



Viewfinder left-right positioning ring

3 Tighten the viewfinder left-right positioning rings.

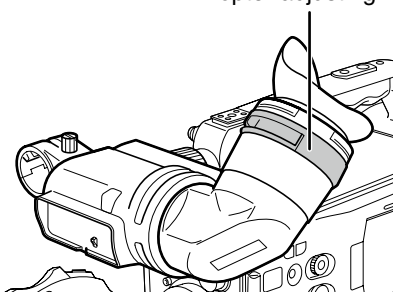
Diopter Adjustment

1 Turn on the POWER switch on the camera.

• Look at the image in the viewfinder.

2 Turn the diopter adjusting ring until you get the sharpest possible image in the viewfinder.

Diopter adjusting ring



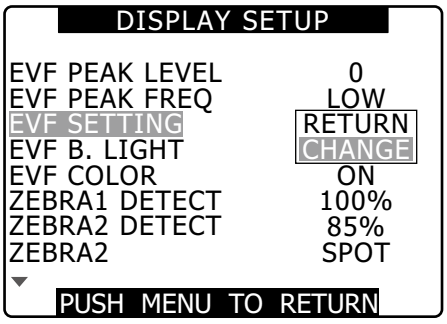
Using the Viewfinder

1 Turn on the POWER switch.

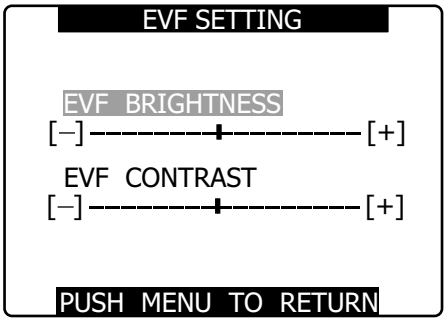
2 Use the subscreen in the menu option EVF SETTING in the DISPLAY SETUP screen to adjust screen brightness and contrast.

For details on menu operations, refer to [Using the menus] (page 125).

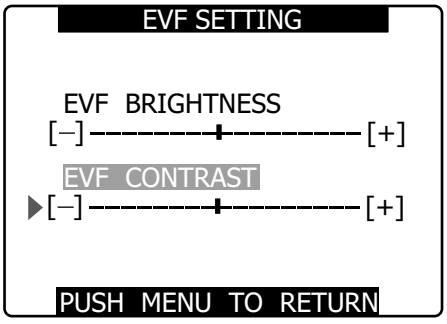
• Select CHANGE in the EVF SETTING.



3 Use the JOG dial Button to select items to set.



4 Press the JOG dial button to select an item and turn the button to make adjustments.



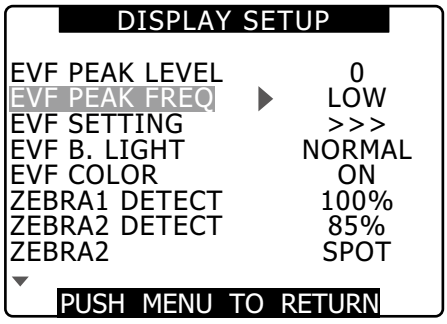
◆ NOTE

- **Pressing the RESET button when an adjustable value is selected in the setting menu EVF SETTING will return that setting to its factory default.**
- **The LCD monitor will appear darker than usual if the camera recorder is cold when it is turned on. The display will return to its normal brightness as it warms up.**
- **The issues described below are viewfinder phenomena that may occur under certain conditions but do not indicate a malfunction. Nor do they affect recording or output signals.**
  - **Primary colors (red, blue and green) may be seen when moving eye position in the viewfinder.**
  - **At low temperature, the screen image may have an irregular pink cast.**
  - **When the camera is off, there may be black stripes across the screen. They disappear when the camera is turned on.**
- **Image lag may increase at low temperatures, but this is not a malfunction.**

Emphasizing Image Outlines

Emphasizing outlines of images in the viewfinder and on the LCD monitor makes it easier to focus.
This function does not affect video output from the camera or video recorded by the camera.

1 Adjust EVF PEAK LEVEL and EVF PEAK FREQ in the DISPLAY SETUP screen.



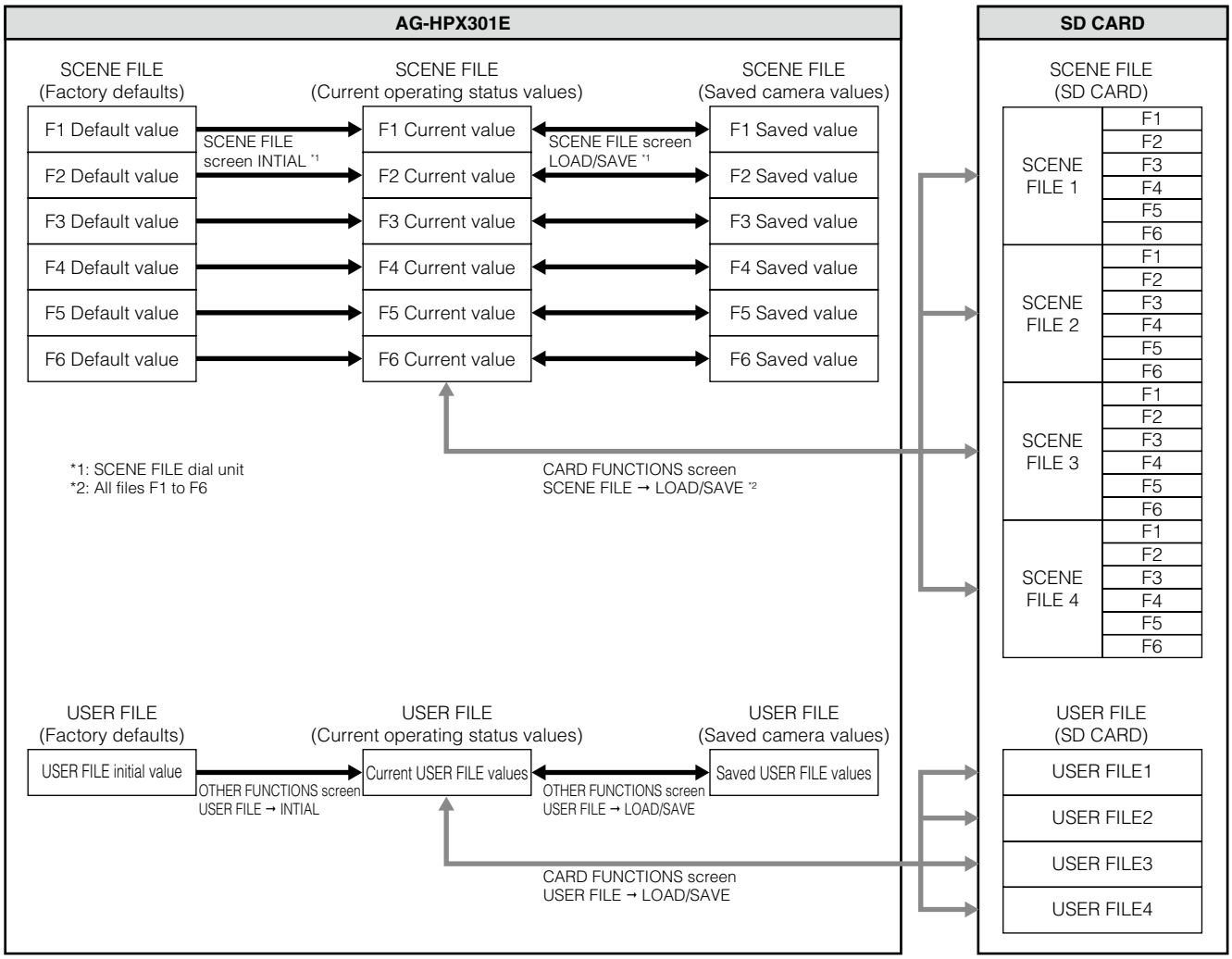
Setting the viewfinder to monochrome mode

Set the menu option EVF COLOR to OFF in the DISPLAY SETUP screen to change the viewfinder to monochrome mode.

Handling setup data

Configuration of setup data files

This camera makes it possible to save a scene file to each of the F1 to F6 positions on the SCENE FILE dial.
Use of an SD memory card makes it possible to save up to four of the F1 to F6 files on an SD card for later retrieval.
The setting menu values can be stored as a user file in the camera and up to four files can be stored on the SD memory card.
The setting data files are configured as shown below.



◆ **NOTE**

- **Running the menu option MENU INIT in the OTHER FUNCTIONS screen returns all current operating status values and saved camera values in the F1 to F6 scene files as well as in the user file to their factory defaults. This function does not return the TIMEZONE setting to its factory default.**
- **Setting data file operations may end in error during playback or when the menu option PC MODE is set to ON in the SYSTEM SETUP screen. Set PC MODE to OFF before performing file operations.**

Setting Data Using an SD memory card

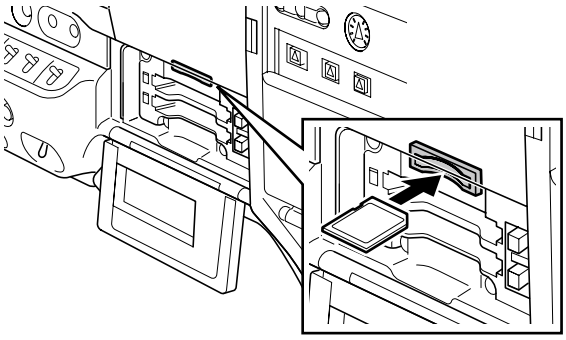
By saving up to four files of setup menu settings on an SD or SDHC memory card (optional accessory), you can create a setup card that will allow you to quickly configure camera settings before recording.

Handling SD memory cards

An SD memory card may be inserted or removed, either before or after the power is turned on.

To insert an SD memory card

Open the slot cover, insert the SD memory card (optional accessory) in the slot with the label side of the card facing upwards and close the slot cover.



◆ NOTE

• An SD memory card must be inserted with the right side facing the slot. If the card cannot be inserted, it may the wrong side up or back-to-front. Do not force it into the slot. Check the card before reinserting it.

• Use only SD memory cards that conform to the SD standard or the SDHC standard in this camera.

Be sure to read [SD memory card precautions] (page 21) regarding SD memory handling.

To remove the SD memory card

Open the slot cover and make sure that the BUSY lamp is not on before pushing the SD memory card further into the slot and releasing it. This will cause the SD memory card to pop out of the slot. Remove the SD memory card and close the slot cover.

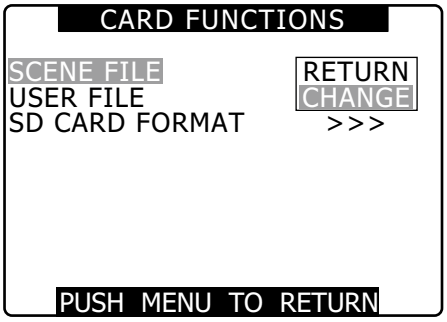
SD memory cards must not be used or stored in an environment where they may be

- Exposed to high temperatures/humidities;
- Exposed to water droplets; or
- Electrically charged.

For storage, the SD memory card must be kept inserted into the AG-HPX301E with the lid closed.

Formatting, Writing and Reading an SD memory card

Open the CARD FUNCTIONS screen from the setting menu to format SD memory cards, write setting data to SD memory cards and to read data stored on an SD memory card.



Use of SD memory cards in a non-SD/SDHC format formatted on a device other than this camera will display a FORMAT ERROR message at the top right of the screen. Reformat such SD cards in the camera before use.
See [To format an SD memory card] (this page).

To format an SD memory card

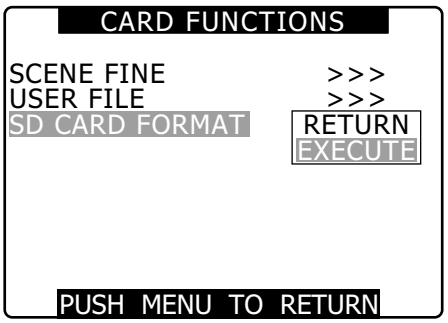
◆ NOTE

SD memory cards may be formatted via the thumbnail screen.
For more information, see [Formatting SD memory cards] (page 120).

1 Select SD CARD FORMAT item in CARD FUNCTIONS, then press the JOG dial button.

For details on menu operation, refer to [Using the menus] (page 125).

2 Select EXCUTE, then press the JOG dial button.



3 Select YES in the confirmation screen and press the JOG dial button.

- "SD CARD FORMAT OK" appears and the SD memory card is formatted.

◆ **NOTE**

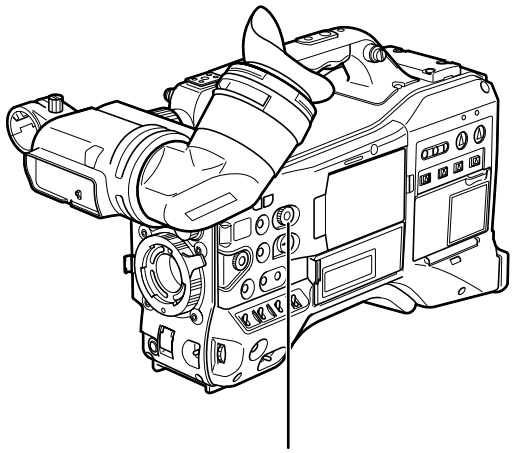
Check that no important data remains on a card before formatting since data erased by formatting cannot be recovered.

The card will not be formatted if the following message appears when the JOG dial button is pressed:

Error message	Remedy
SD CARD FORMAT NG NO CARD (No SD memory card inserted.)	Insert an SD memory card.
SD CARD FORMAT NG ERROR (SD memory card cannot be formatted.)	The card may be defective. Replace the card.
SD CARD FORMAT NG WRITE PROTECT (SD memory card is write-protected.)	Remove the card and cancel the protect.
SD CARD FORMAT NG CANNOT ACCESS (SD memory card not accessible).	The SD memory card is not accessible. When the current access operation ends, reformat the card.

How to Use Scene File Data

- Each position of the SCENE FILE dial stores settings for specific shooting situations.
- When shooting, you can retrieve the necessary file instantly using scene file dial.
- You can also use menu options to change set scene file values. A modified scene file can be saved to each scene file dial position.



SCENE FILE dial

- Note that changing scene files during recording will not change VFR and frame rate settings. To make such changes, set the camera to recording standby status.

■ Factory setting

- F1: SCENE
  File suitable for normal shooting.
- F2: SCENE FLUO.
  File suitable for shooting under fluorescent lights, ie. indoors.
- F3: SCENE SPARK
  File suitable for SD shooting with a greater range of resolution, coloring and contrast.
- F4: SCENE B-STR
  File for increasing the contrast of dark areas, such as when shooting sunsets.
- F5: SCENE CINE V
  File suitable for shooting movie-like scenes where the contrast is to be emphasized.
- F6: SCENE CINE D
  File suitable for shooting movie-like scenes where the dynamic range is to be emphasized.

◆ **NOTE**

Changes to scene files do not affect SYSTEM MODE settings. Use the SYSTEM SETUP screen to make such changes.

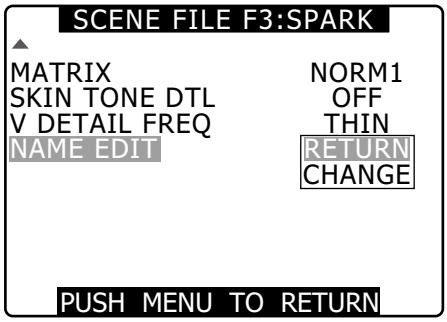
Changing scene file settings

■ Example1: Change the name of the scene file.

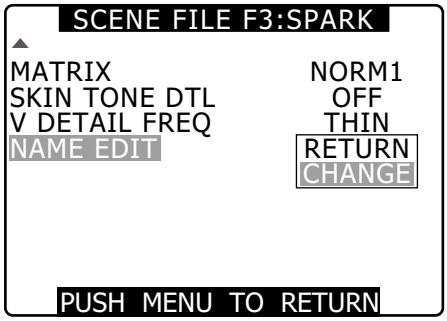
1 Turn the scene file dial, then select the scene file to be changed.

2 Select the menu option NAME EDIT in the SCENE FILE screen, then press the JOG dial button.

For details on menu operation, refer to [Using the menus] (page 125).

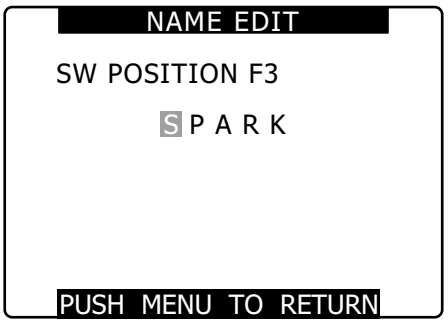


3 Select CHANGE and press the JOG dial button.



4 When the screen shown below appears, use the JOG dial button to enter a 6-character file name.

- Turning the JOG dial button changes the character display in the following order: space (□) → alphabet (A to Z) → numerics (0 to 9) → symbols (; : < = > ? @ [\ ] ^_-./).
- If the RESET button is pressed when the filename has been set, the characters are cleared.

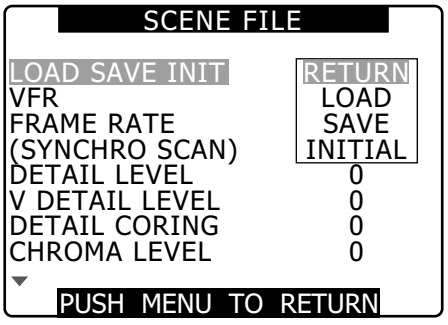


- After you finish setting the filename, press the MENU button. This completes the NAME EDIT change. A change that has been confirmed is retained after a power down and is not affected by dial position. Items set for the scene file are also retained.

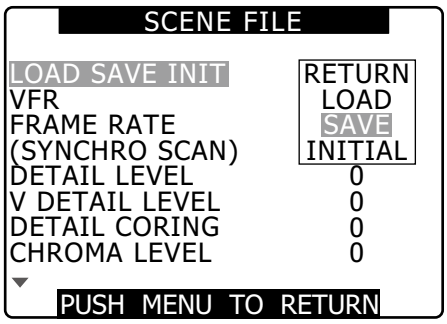
■ Example2: Save the F1 scene file to the camera.

1 Select the menu option LOAD/SAVE/INT in the SCENE FILE screen, then press the JOG dial button.

For details on menu operation, refer to [Using the menus] (page 125).

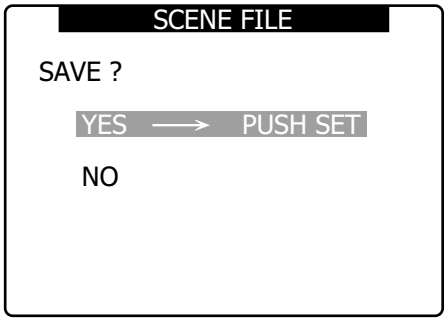


2 Select SAVE and press the JOG dial button.



3 Select YES and press the JOG dial button.

- To return to the menu level above, press the MENU button.



- "PROCESSING" appears and the following message is shown when all settings have been completed.



- After changing the scene file settings, to return to the settings to the previously saved values, select LOAD in step 2 and perform the operation described in step 3.
- To return the scene file settings to their factory defaults, select INITIAL in step 2 and perform the operation described in step 3.
- To save and read user file settings or return them to their factory defaults, open the setting menu OTHER FUNCTIONS screen and run USER FILE in the same way as when handling scene files.

Saving scene files and other settings on SD memory cards

You can save up to four scene file settings or other settings as files on an SD memory card, and you can also load them from the card.

- Current scene file settings are automatically saved in the camera and written to an SD memory card. When data has been read from an SD memory card, the current settings are rewritten at the same time as the data saved inside the unit.
- The data in all the scene files, F1 to F6, is rewritten. Be sure to read [Handling SD memory cards] (page 86) regarding SD memory handling.

The following procedure shows how to save scene files.

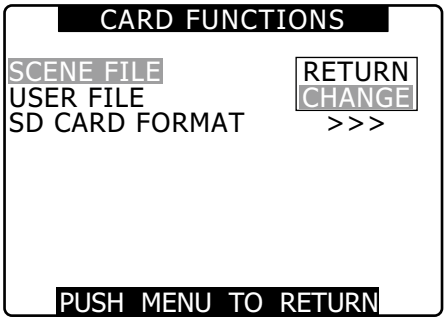
1 Set the unit's POWER switch to ON.

2 Select the menu option SCENE FILE in the CARD FUNCTIONS screen, then press the JOG dial button.

For details on menu operation, refer to [Using the menus] (page 125).

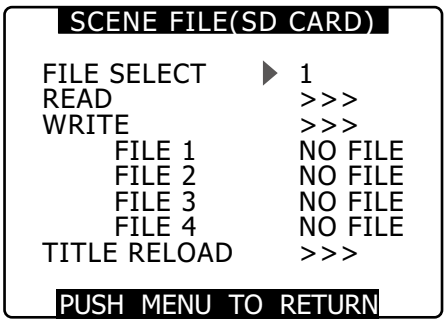
3 Select CHANGE and press the JOG dial button.

- Select the menu option USER FILE for other settings.

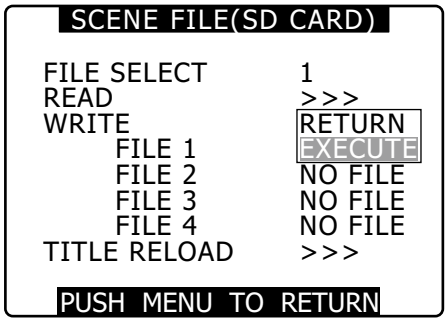


4 Select the file number (1 to 4) using the JOG dial button.

- Press the JOG dial button again to confirm the setting.

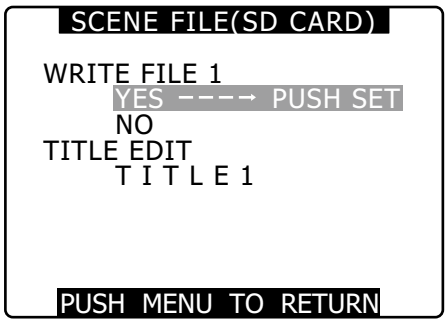


5 Select WRITE and press the JOG dial button, then select EXECUTE and press the JOG dial button.



6 Press the cursor button, turn the JOG dial button to move to YES and again press the JOG dial button.

- In the following example, TITLE 1 is the filename.
- When writing is completed, WRITE OK appears.



To load a file

Perform steps 1 to 4. Select READ in step 5, select EXECUTE and press the JOG dial button. READ OK appears when loading completes.
Like scene files, process user files by using the menu option USER FILE in the CARD FUNCTION screen.

Reloading Files From an SD Memory Card

Perform steps 1 to 3, move to TITLE RELOAD so that YES is displayed in step 5, and press the JOG dial button.
The file is reloaded.

To title a file

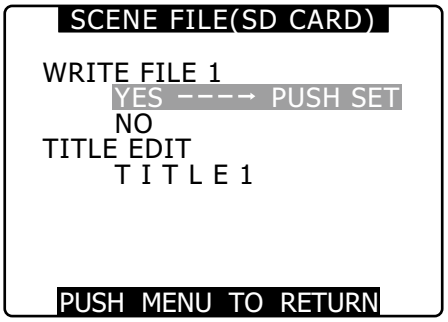
1 Perform steps 1 to 5.

2 Use the JOG dial button to select characters, then press the JOG dial button to move to the next character.

- You can input any of the following characters: Space, A to Z, 0 to 9, : ; < = > ? @ [\ ] ^_-./
- You can erase all characters using the RESET button.

3 When all entries have been made, move the cursor to the right of the entered title.

4 Select YES and press the JOG dial button.



- "WRITE OK" appears when the title is written.

◆ **NOTE**

- **If WRITE NG FORMAT ERROR appears, format the SD memory card.**
- **If WRITE NG WRITE PROTECT appears, change the lock tab position to enable writing.**
- **If WRITE NG CANNOT ACCESS appears, quit all other operations (such as playback) before proceeding.**
- **If WRITE NG ERROR appears, the SD memory card may be defective. Replace it.**

Chapter 5 Preparation

Power Supply

A battery or an external DC power supply can be used as the power supply for the camera-recorder.

Using a Battery

The following is a list of batteries that have been tested and verified to work with the camera.

■Anton/Bauer batteries
PROPAC14, TRIMPACK14
HYTRON50, HYTRON140
DIONIC90, DIONIC160
■IDX batteries
NP-L7, ENDURA7, ENDURA10
■Sony batteries
BP-GL65/95
■PAG batteries
PAGL95

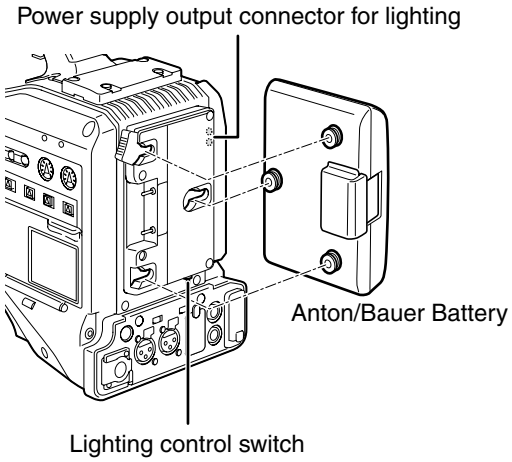
◆ NOTE

• Although other batteries may be used by changing the menu setting, it is recommended that you use batteries that have been tested and verified to work with camera.
• Charge the battery with the battery charger before using it. (Please refer to the battery charger's instruction manual for information about charging.)

Mounting the Battery and Setting the Battery Type

Using an Anton/Bauer Battery

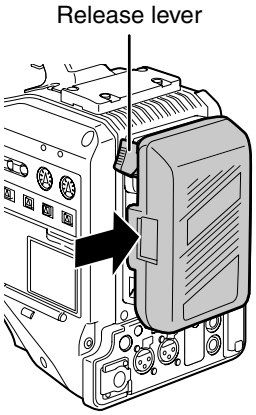
1 Mount an Anton/Bauer battery.



◆ NOTE

The Anton/Bauer battery holder includes both a power supply output connector for lighting and a lighting control switch, which are convenient when attaching a light. Please contact Anton/Bauer for information about the lighting system.

2 Insert the battery and slide it in the direction of the arrow.



◆ NOTE

■Removing the battery
Completely push down and hold the release lever on the battery holder. Then, slide the battery in the opposite direction to the arrow while holding the lever down.

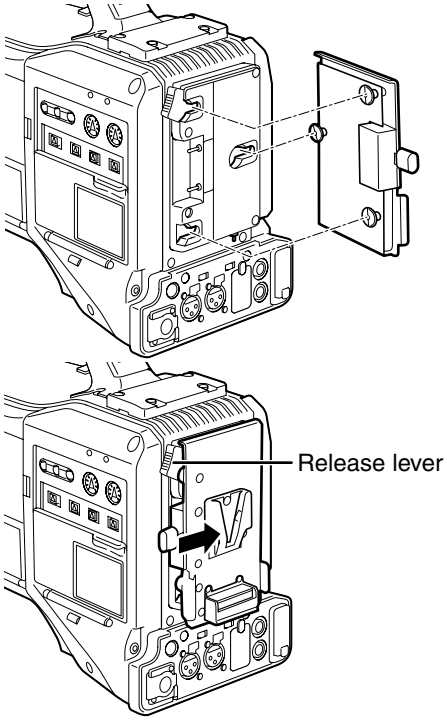
3 Set the battery type.

• Select the battery type listed under BATTERY SELECT. Select the menu option BATTERY SELECT from the setting menu BATTERY SETUP screen.

When using a V-mount type battery

Mount the V-mount adapter plate. Insert the plate and slide it as shown below.

• To remove the plate, slide the release lever downwards.



Setting the battery type

• Select the battery type listed under BATTERY SELECT. Select the menu option BATTERY SELECT from the setting menu BATTERY SETUP screen.

• When using a battery not listed under BATTERY SELECT: If it is a NiCd battery, select “NiCd14 (14V)” and set each item according to the battery characteristics. If it is not a NiCd battery, select TYPE A or TYPE B and set each item according to the battery characteristics. For details, refer to [BATTERY SETUP screen] (page 140).

◆ **NOTE**

• For information about the V-mount adapter plate, please contact the store where you purchased the camera-recorder.

• With the V-mount adapter plate installed, % (percent) values cannot be displayed when using batteries that show the remaining battery capacity.

When using an NP battery

1 Mount a V-mount adapter plate on the camera.

Refer to [When using a V-mount type battery] (this page).

2 Attach a holder plate on the NP battery case.

• When the battery plate comes with a packing, first insert the packing in the battery case.

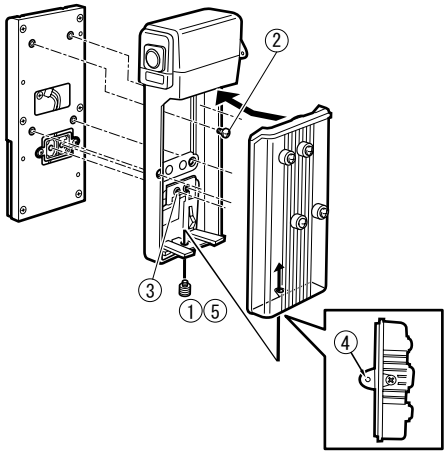
(1) Remove the screw at the bottom of the cover and remove the cover.

(2) Line up the openings in the battery case and battery plate and use the supplied screws to fasten the case to the plate.

(3) Tighten the power supply connector screw.

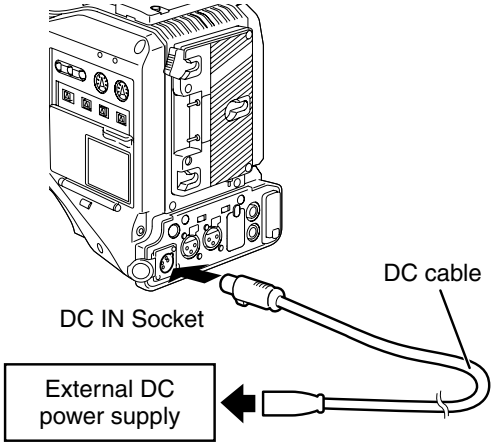
(4) Insert the removed top cover in the direction of the arrow.

(5) Line up the openings in the lower cover (metal part) and the case and use the securing screw to fasten them together.



Use of the external DC power supply

1 Connect the external DC power supply to the DC IN socket on the unit.



2 Turn “ON” the power switch of the external DC power supply. (If the power switch is available on the external DC power supply)

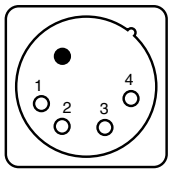
3 Turn the camera-recorder power switch ON.

■Use of external DC power supply
Make sure that the output voltage of the external DC power supply meets the rated voltage of the camera before making a connection.
The output current of the external DC power supply should be large enough to provide the connected camera with its total amperage needs with a reasonable margin.
Use the following formula to calculate the total amperage of the camera.

total power consumption ÷ voltage

When the power is turned on, a rush current occurs. If the power supply is insufficient during this time, the camera may be damaged. Therefore, we recommend using an external DC power supply that provides at least twice the total power consumed by the camera and all the devices connected to the unit that power on when the camera powers on (example: lens, wireless microphone receiver). We also recommend using the proper DC cable recommended for your external DC power supply.

- When using an external power supply other than the AC adapter, check the DC IN socket pin information to ensure correct polarity. If a +12 V power supply is accidentally connected to the GND terminal, this could cause a fire or personal injury.



Pin No.	Signal
1	GND
2, 3	—
4	+12V

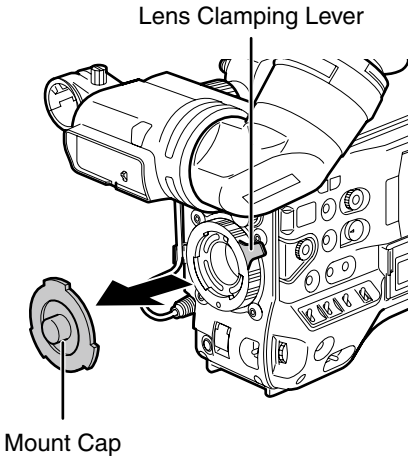
◆ **NOTE**

- **When both the battery and the external DC power supply are connected, power is supplied from the external DC power supply. The battery can be removed or mounted while using an external DC power supply.**
- **When using an external DC power supply, make sure you turn on the external DC power supply before turning on the camera-recorder’s power switch. If this sequence is reversed, the camera-recorder may malfunction due to slow rising of the external DC power supply voltage.**
- **To connect a battery to the DC IN connector, select BATTERY in the menu option EXT DC IN SEL, and select the battery type in the menu option BATTERY SELECT in the BATTERY SETUP screen. Note that with these settings, the “%” indication cannot be displayed, even for batteries capable of indicating remaining power.**

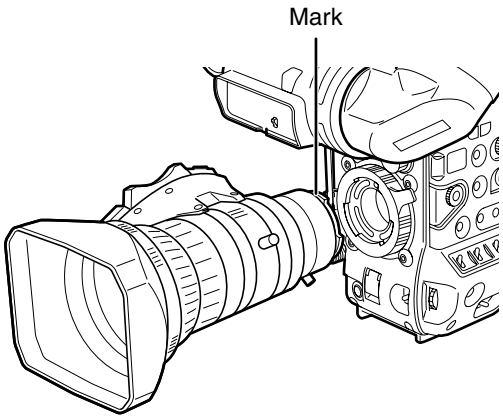
Mounting and Adjusting the Lens

Mounting the Lens

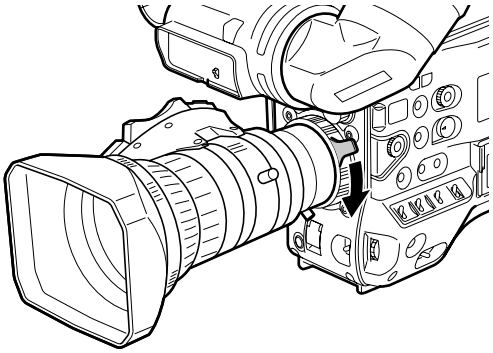
1 Raise the lens clamping lever and remove the mount cap.



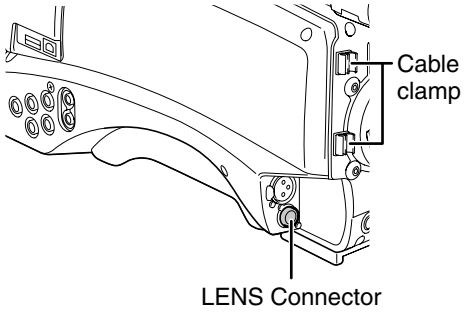
2 To mount the lens, align the indentation at the top center of the lens mount with the center mark of the lens.



3 Lower the lens lever to firmly tighten the lens.



4 Secure the cable through the cable clamp, and plug it into the LENS connector.



For details on the current provided by the lens terminal, refer to page 171.

5 Adjust the lens flange back.

For details, refer to [Adjusting the Lens Flange Back] (page 95).

◆ **NOTE**

- **Please refer to the lens instruction manual for guidance on lens handling.**
- **When the lens is removed, install the mount cap to protect the device.**

Adjusting the Lens Flange Back

If images are not clearly focused at both telephoto and wide-angle positions during zoom operations, adjust the flange back (distance from the lens mounting surface to the image formation surface).
Once adjusted, the flange back does not need to be re-adjusted as long as the same lens is mounted on the camera.

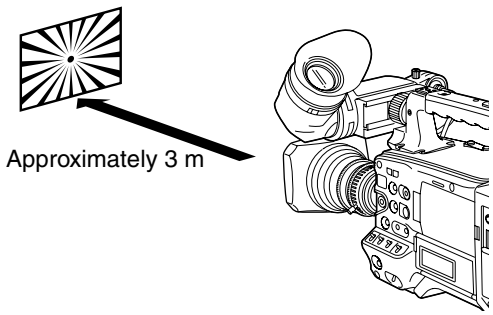
◆ **NOTE**

Please also refer to the lens instruction manual for directions on adjustment and locations of individual lens parts.

1 Mount the lens on the camera.

- Make sure you connect the lens cable.

2 Set the lens iris to manual, and fully open the iris.



3 Place the flange back adjustment chart about 3 m from the lens and adjust the lighting on the chart to obtain an appropriate video output level.

- If the video level is too high, use the filters or the shutter.

4 Loosen the F.f (Flange focus) ring clamping screw.

◆ **NOTE**

F.b (Flange back) may be indicated on some lenses.

5 Set the zoom ring to the telephoto position, either manually or by electric drive.

6 Shoot the flange back adjustment chart and turn the distance ring to adjust focus.

7 Set the zoom ring to the wide-angle position and turn the F.f (flange focus) ring to adjust focus.

- Do not move the distance ring during focusing.

8 Repeat Steps 5 to 7 until the lens is in focus at both the telephoto and wide-angle positions.

9 Firmly tighten the F.f ring clamping screw.

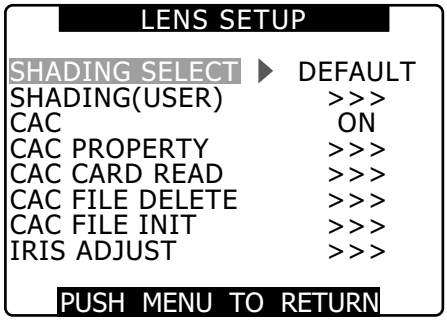
White Shading Compensation

The camera can use DEFAULT (fixed value) and three user adjustable functions (USER1, USER2, USER3) to store white shading compensation data.
Select SHADING SELECT in the setting menu LENS SETUP screen to set compensation data. Selecting OFF turns off shading compensation.

Selecting White Shading Compensation Data

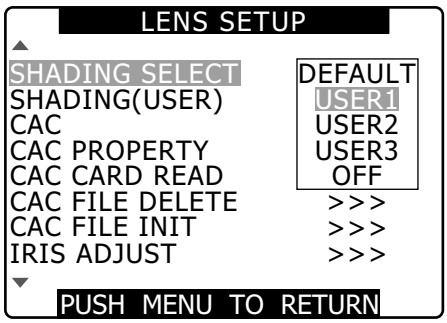
1 Select SHADING SELECT in LENS SETUP, then press the JOG dial button.

For details on menu operation, refer to [Using the menus] (page 125).



2 Use the JOG dial button to select DEFAULT, USER1, USER2, USER3 or OFF and press the JOG dial button.

- To adjust the white shading, select USER1, USER2 or USER3.
- The USER1, USER2 or USER3 settings do not contain any compensation data by default.
- DEFAULT stores compensation data that suits XT17x4.5BRM-K14. For lenses other than those above, perform the “White Shading Adjustment” described below.



White Shading Adjustment

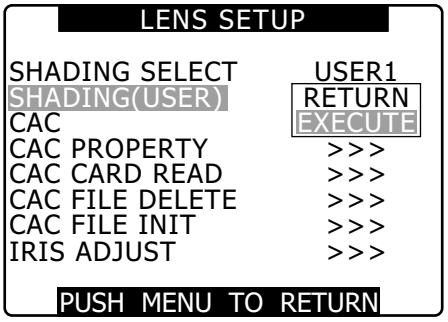
◆ **NOTE**

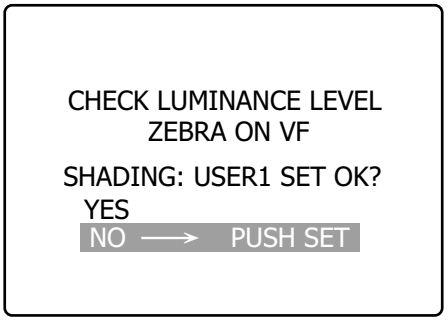
Coloring may occur in the vertical direction near the open setting of the lens iris even when the white shading has been adjusted. This is an optical characteristic and not indicative of a failure.

1 Place the camera in the adjustment mode.

(1) Mount a lens on the camera.
- Do not forget to connect the lens cable.

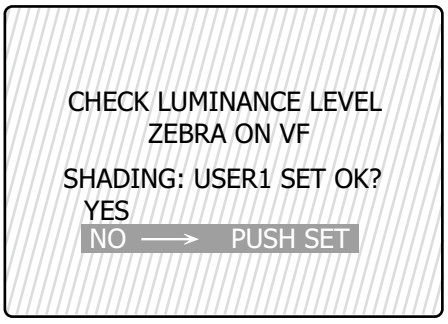
(2) Turn the shutter switch off and set 0 dB gain.
(3) If the lens comes with an extender, disengage it.
(4) Open the setting menu LENS SETUP screen and select USER1, USER2 or USER3 under SHADING SELECT.
(5) Use the JOG dial button to select SHADING (USER), select EXECUTE and press the JOG dial button.
- The message “CHECK LUMINANCE LEVEL ZEBRA ON VF” appears.





2 Set the image.

(1) Shoot a solid white sheet of paper.
(2) Set the lens iris to manual and adjust the iris so that a zebra pattern fills the entire viewfinder screen.
- When the piece of paper is unevenly lit, the zebra pattern will not cover the entire screen. Adjust as required.
- Make sure that the white paper is not exposed to multiple light sources (example, fluorescent lighting or halogen lamps) of different color temperatures.



◆ **NOTE**

- **Adjust the white shading in sunlight, under halogen lamp light or other light source that does not flicker. Fluorescent light and mercury lamps tend to flicker and should not be used for this adjustment.**
- **Adjust the light source if the lens iris is out of the range between F4 and F11.**
- **Make sure the electronic shutter is set to off.**

3 Adjust white and black balance.

(1) Set the WHITE BAL switch to A or B and use the AUTO W/B BAL switch to make an automatic white balance adjustment.
(2) Use the AUTO W/B BAL switch to make an automatic black balance adjustment.
(3) Again, use the AUTO W/B BAL switch to make an automatic white balance adjustment.

4 Repeat the operation in step 2-(2).

5 Adjust white shading.

(1) Use the JOG dial button to select YES and press the JOG dial button.
(2) The message “SHADING ACTIVE” appears on the screen during adjustment.
(3) When the adjustment ends after a few seconds, the message “SHADING OK” appears.
- When an error message such as “SHADING NG LEVEL OVER” or “SHADING NG LOW LIGHT” appears, adjust the iris.
- The adjusted value is automatically stored in memory (USER1, USER2, USER3).

6 If the lens is provided with an extender, turn on the extender function and perform steps 2 to 5 again.

- The white shading adjustment need not be readjusted when the extender is later turned off.

Setting Chromatic Aberration Compensation (CAC)

The CAC function of the camera corrects the registration error caused by the slight chromatic aberration that the lens cannot compensate for. This minimizes color bleeding into the surrounding image areas.
Lenses compatible with the CAC function whose CAC data is registered in the camera will automatically start CAC operation.
CAC data for the following lenses have been stored in the camera as default values.

Camera indication	Model numbers of compatible lenses
XT17X4.5BRM-K14	XT17x4.5BRM-K14

◆ **NOTE**

- **One of the lens model number appearing in the menu represents the lens group.**
- **The CAC function in this camera operates in horizontal direction only.**
- **The CAC function does not operate at +24 dB.**
- **The CAC function may not operate normally in macro shooting.**
- **After the release of this camera, visit our Web site at the address given below for details on new lenses compatible with this function and any changes in this function.**
  https://eww.pavc.panasonic.co.jp/pro-av/

Checking CAC Operating Status

When the menu is not open, the CAC indication at the top right of the screen indicates that the CAC function is on.

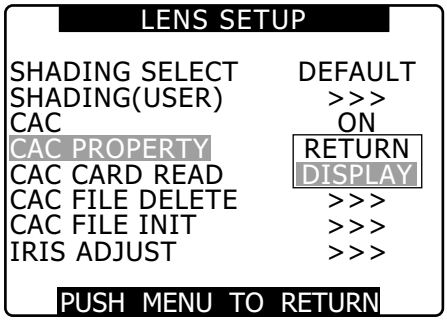
Checking CAC data number and CAC data during operation

1 Open the LENS SETUP screen.

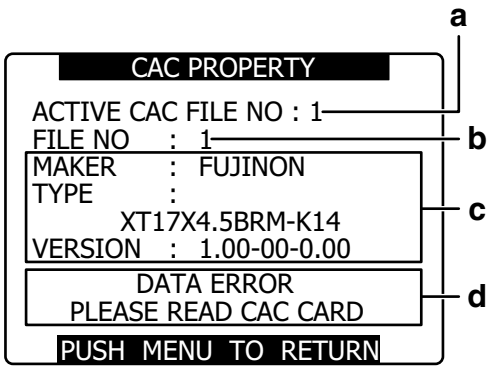
For details on menu operation, refer to [Using the menus] (page 125).

2 Turn the JOG dial button to select CAC PROPERTY and select DISPLAY to open the CAC PROPERTY screen.

• The CAC property list appears.



■CAC Property



a Current CAC data number

b Data number of CAC you wish to check
Turn the JOG dial to select.

c CAC data of the specified file (b)

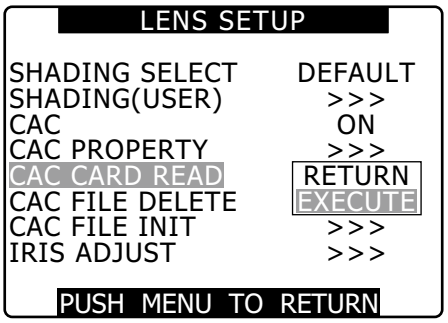
d Error messages
The file cannot be used if an error message appears. Initialize the CAC data or reload the CAC file from an SD card.
For details, see [Initializing CAC File] (page 99) or [Loading CAC File From an SD Card] (this page).

Loading CAC File From an SD Card

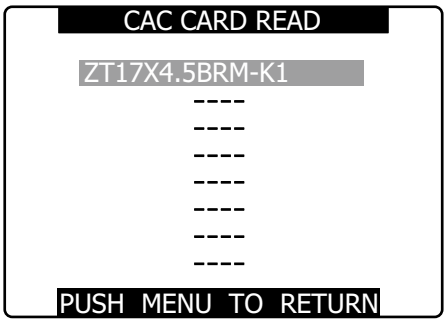
1 Open the LENS SETUP screen.

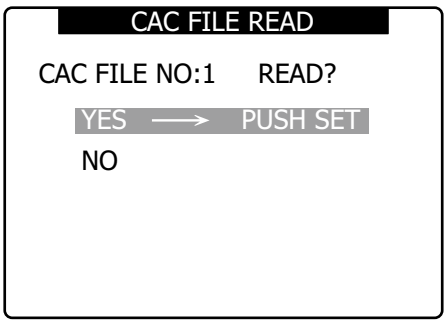
For details on menu operation, refer to [Using the menus] (page 125).

2 Use the JOG dial button to select CAC CARD READ. Then select EXECUTE to open the CAC CARD READ screen.



3 Use the JOG dial button to select the CAC file to load. Then select YES and press the JOG dial button.





◆ NOTE

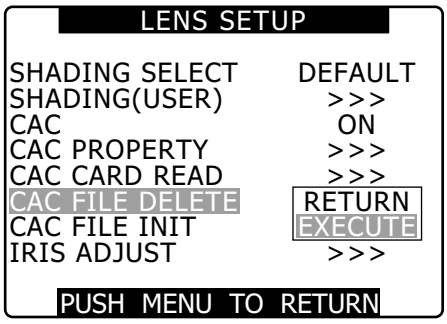
- **The camera can load up to 8 files.**
  When an attempt is made to load a new file while 8 files have already been loaded, "READ NG CAC FILE FULL" appears. To load a new file, delete an existing file before loading the new file.
  For details, see [Deleting CAC File] (this page).
- **"READ NG FORMAT ERROR" indicates the file cannot be used and will not be loaded. Make sure the file is in a format the camera supports and that the file on the SD card is not corrupted.**

Deleting CAC File

1 Open the LENS SETUP screen.

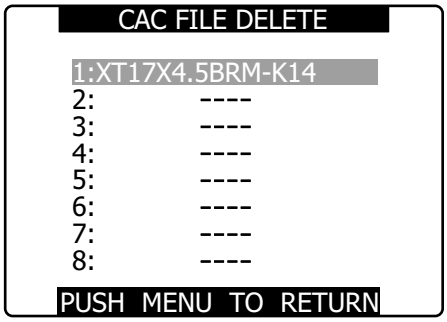
For details on menu operation, refer to [Using the menus] (page 125).

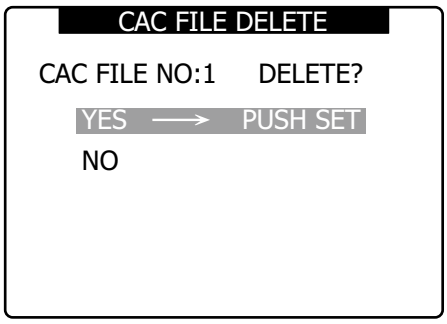
2 Use the JOG dial button to select CAC FILE DELETE, select EXECUTE and press the JOG dial.



3 Use the JOG dial to select the CAC file to be deleted. Then select YES and press the JOG dial button.

"-----" is indicated when deletion ends.



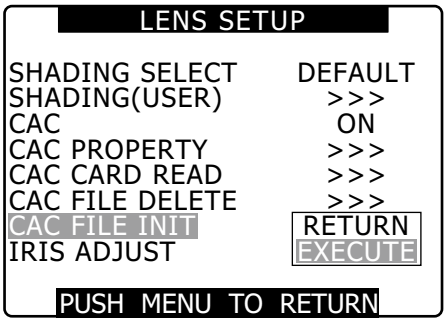


Initializing CAC File (Returning Data to Their Factory Defaults)

1 Open the LENS SETUP screen.

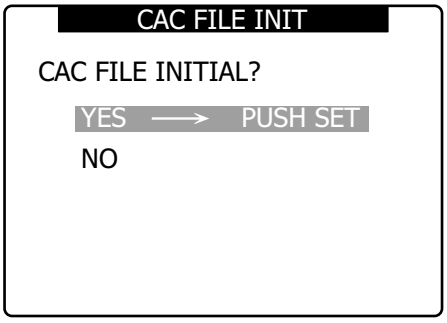
For details on menu operation, refer to [Using the menus] (page 125).

2 Use the JOG dial button to select CAC FILE INIT, select EXECUTE and press the JOG dial.



3 Select YES in the confirmation screen and press the JOG dial button.

- CAC FILE INIT → PROCESSING → COMPLETED (these three appear in succession) to indicate that initialization has been completed.
- The LENS SET UP screen appears after completion.



◆ NOTE

This operation deletes all files loaded into the camera and returns the four CAC data files to their factory defaults.

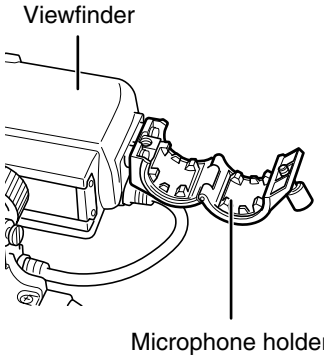
Preparing for Audio Input

Take the following steps to prepare the camera for connecting audio input devices.

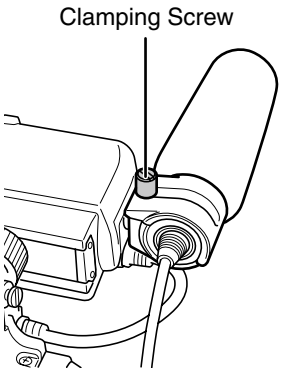
When Using the Front Microphone

The AJ-MC200G microphone kit (optional) includes a microphone that can be mounted on the camera.

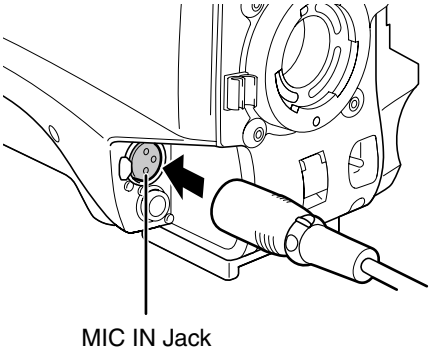
1 Open the microphone holder.



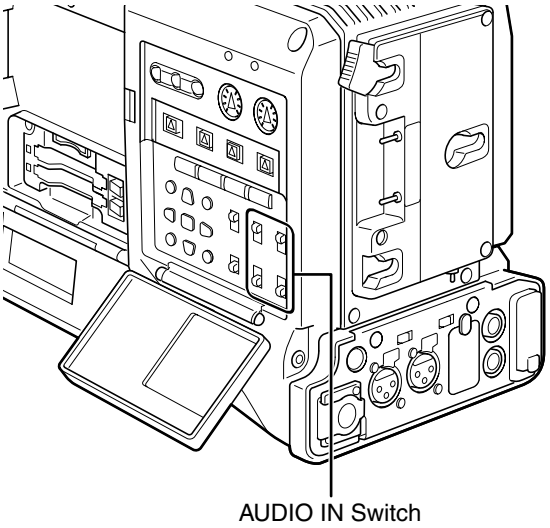
2 Mount the microphone and tighten the clamping screw.



3 Connect the microphone cable to the MIC IN jack on the camera.

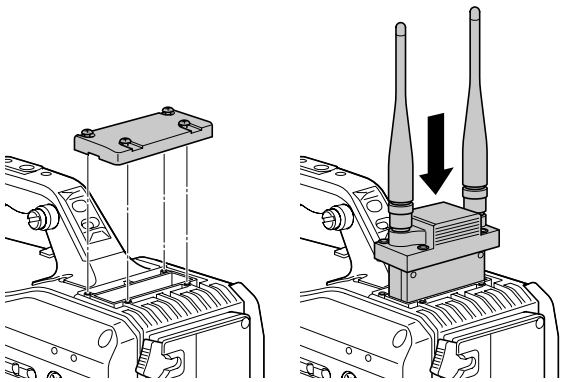


4 Set the AUDIO IN switch to [FRONT] depending on the audio channel to be recorded.

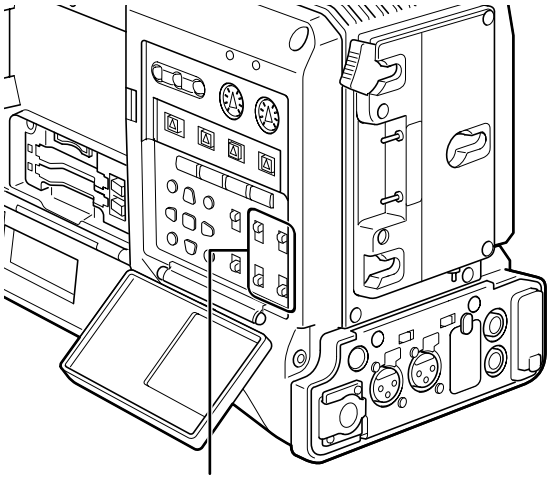


Using a wireless receiver

1 Remove the lid, install the wireless receiver and screw it down.



2 Set the AUDIO IN switch to W.L. for the audio channels that will be recorded.



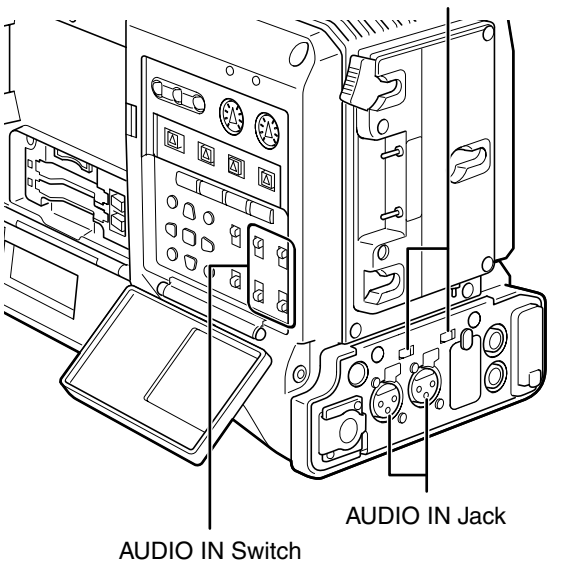
- Set the menu option WIRELESS TYPE in the AUDIO SETUP screen to DUAL for a 2-channel wireless receiver.

When Using Audio Devices

1 Connect the audio device to the AUDIO IN jack with the XLR cable.

2 Set the AUDIO IN switch to [REAR] for the channel to which the XLR cable is connected.

3 Set the LINE/MIC/+48V selector switch on the rear panel to [LINE].

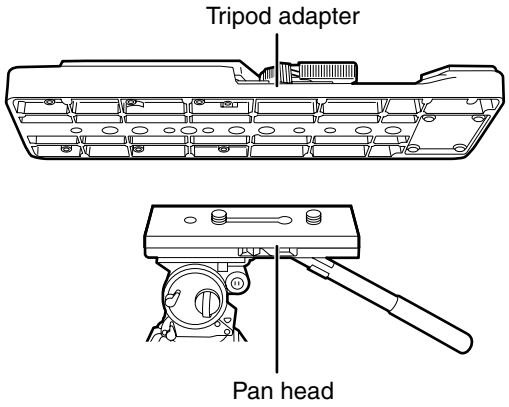


Attaching Accessories

Mounting the Camera on a Tripod

Use an optional (SHAN-TM700) tripod adapter to place the camera on a tripod.

1 Attach the tripod adapter to the tripod.

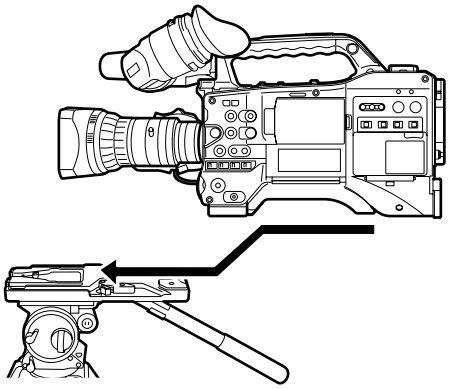


◆ **NOTE**

Use the holes in the tripod adapter that will make it possible to position the camera over the tripod adapter's center of gravity.
Also, make sure that the diameter of the selected hole matches the diameter of the pan head screw.

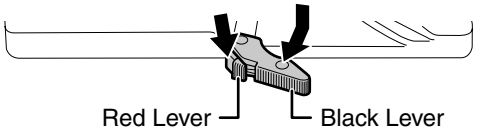
2 Attach the camera to the tripod adapter.

- Slide the camera forward along the grooves until you hear a "click".



Removing the Camera from the Tripod Adapter

While holding the red lever down, move the black lever in the direction of the arrow, and slide the camera backward to remove it.

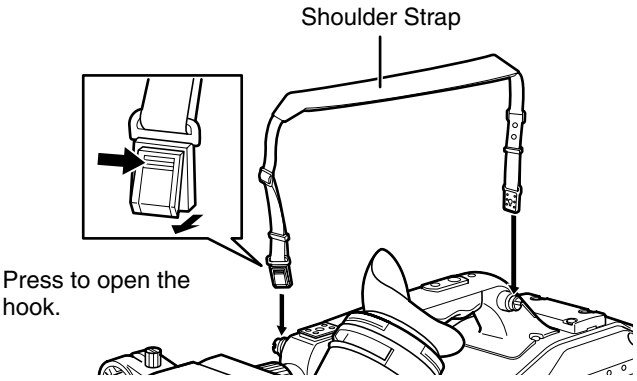


◆ **NOTE**

If the tripod adapter's pin does not return to its original position after the camera has been removed, hold the red lever down and move the black lever in the direction of the arrow again, in order to return the pin to its original position.
Please note that the camera cannot be mounted if the pin remains in the center.

Attaching the Shoulder Strap

Attach the shoulder strap to the shoulder strap bracket. To detach the shoulder strap, first open the hooks, then detach the strap.

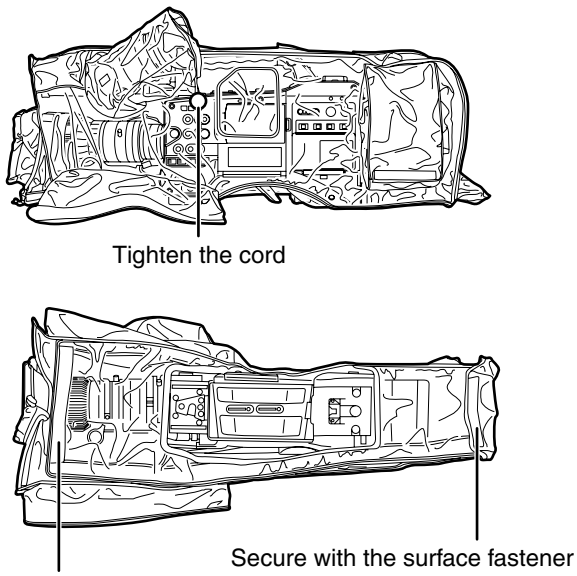


◆ **NOTE**

Make sure that the shoulder strap is securely attached.

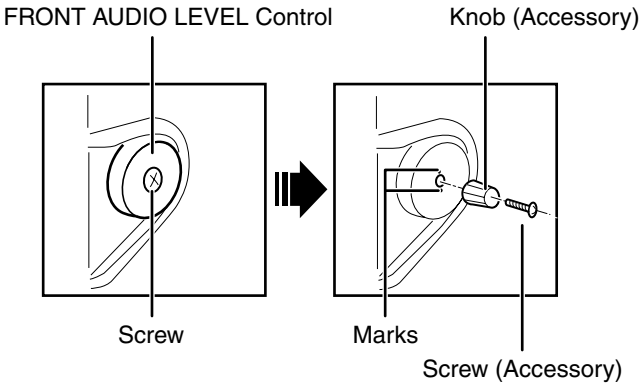
Attaching the Rain Cover

When using the SHAN-RC700 Rain Cover



Attaching the FRONT AUDIO LEVEL Control Knob

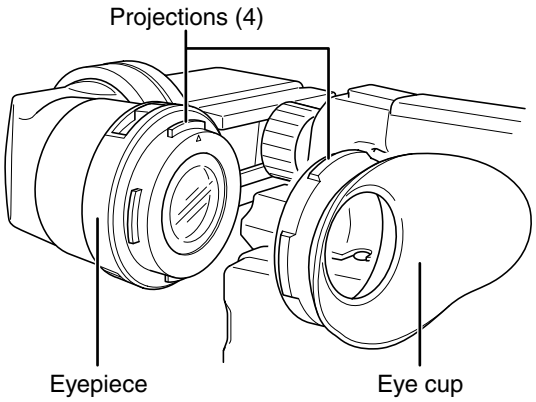
If you use the FRONT AUDIO LEVEL control frequently, attach the accessory knob so that it can be easily operated.



Remove the screw in the center of the FRONT AUDIO LEVEL control, and attach the accessory knob using the screw (included). When attaching the knob, be sure to align the marks on the control with the marks on the knob.

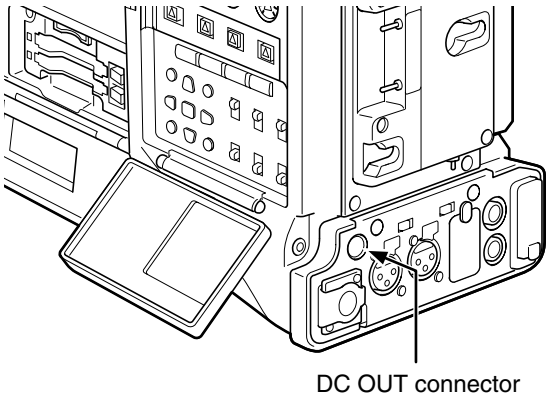
Attaching the Eye Cup

Attach the eye cup by aligning the projections on the eyepiece and the eye cup.

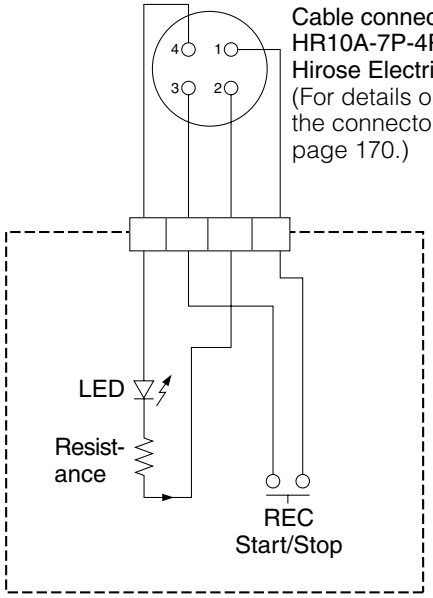


DC OUT Connector and External REC Start/Stop Switch Connection

The DC OUT connector on the camera can output a 1.5 A current.
Connecting an external switch to this connector enables REC Start and Stop control.
An LED can be connected and used as a tally lamp, which is convenient when the camera is mounted on a crane during recording.



(Connection example)



1: GND

2: TALLY OUT
The AG-HPX301E has open collector output
TALLY ON:
Low impedance
TALLY OFF:
High impedance

3: REC Start/Stop switch
This pin is connected in parallel with the REC button and the lens VTR button.

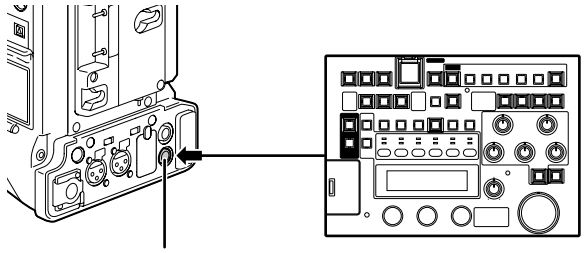
4: +12 V

◆ **NOTE**

Be sure to check polarity before connecting an external device as incorrect connection could lead to damage.

Connecting the AJ-RC10G Remote Controller

- Some functions can be remote-controlled when the remote control unit AJ-RC10G (optional accessory) is connected to the camera.
- When the AJ-RC10G is connected, the camera automatically enters remote control mode after the power switches of both the camera and the AJ-RC10G are turned ON.



REMOTE connector AJ-RC10G

◆ **NOTE**

- Be sure to turn the POWER switches on the camera and the AJ-RC10G off before connecting or disconnecting the controller cable.
- Use only designated cables or optional cables to connect the AJ-RC10G. Use of other cables could result in equipment damage.
- The USER buttons and MENU button do not work when the AJ-RC10G is connected.
- Refer to the Operating Instructions of the AJ-RC10G included in the supplied CD-ROM.
- For details on the current provided by the REMOTE terminal, refer to page 170.

Chapter 6 Manipulating Clips with Thumbnails

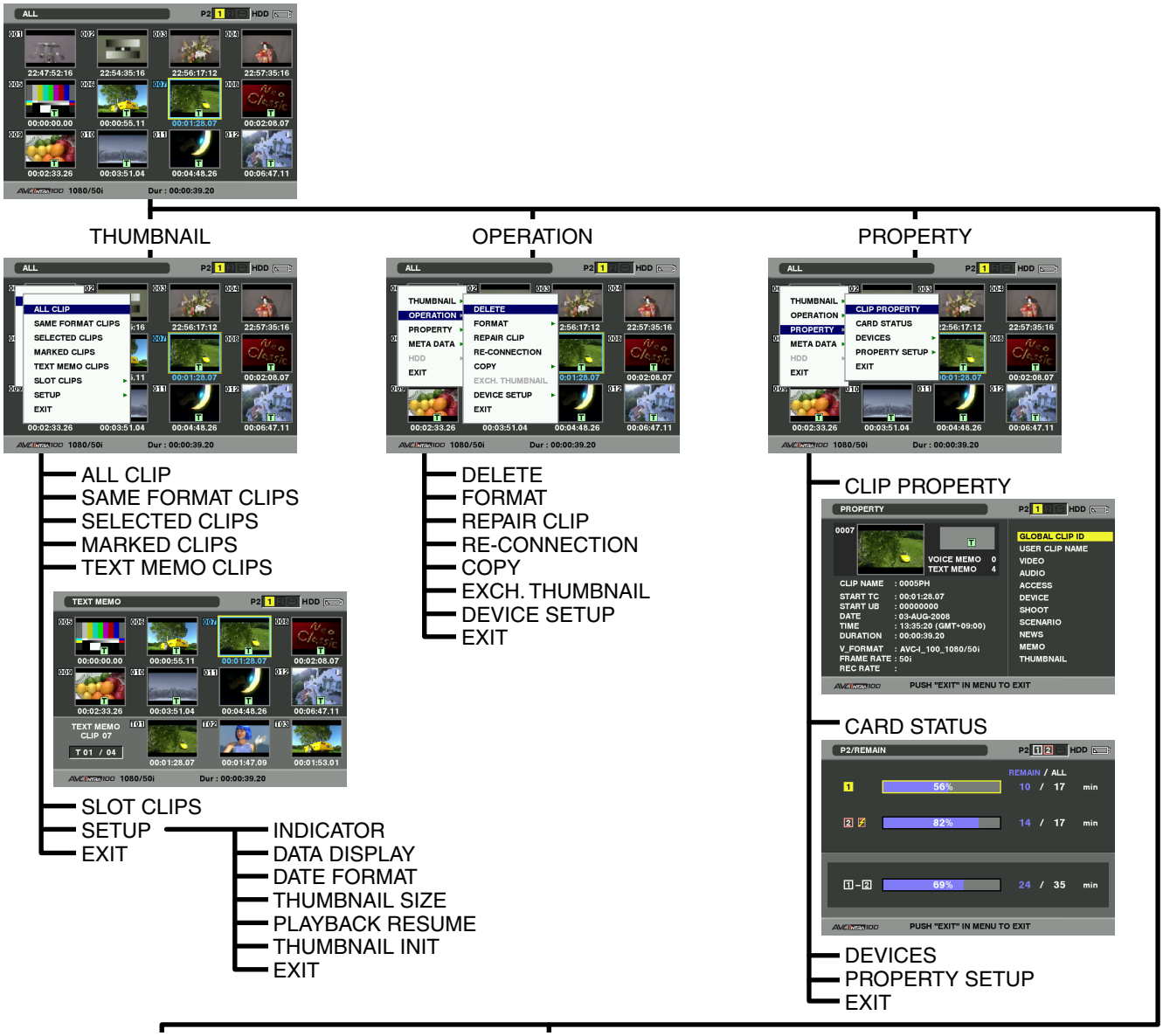
A clip is a data group that includes the images and sounds created from one shooting session, together with additional information such as text memos and meta data.
The following manipulations can be performed using the cursor and SET buttons, while checking the images displayed on the LCD monitor:

- Playback, delete, copy or restore the clip.
- Add or delete a shot mark and a text memo on the clip thumbnail.
- Copy part of a clip by using the text memo.
- Use a text memo to change thumbnail images
- Format P2 cards and SD memory cards.
- Uploading and editing clip metadata from the SD memory card

Thumbnail Operations

Thumbnail Manipulations Overview

Thumbnail screens are configured as follows:

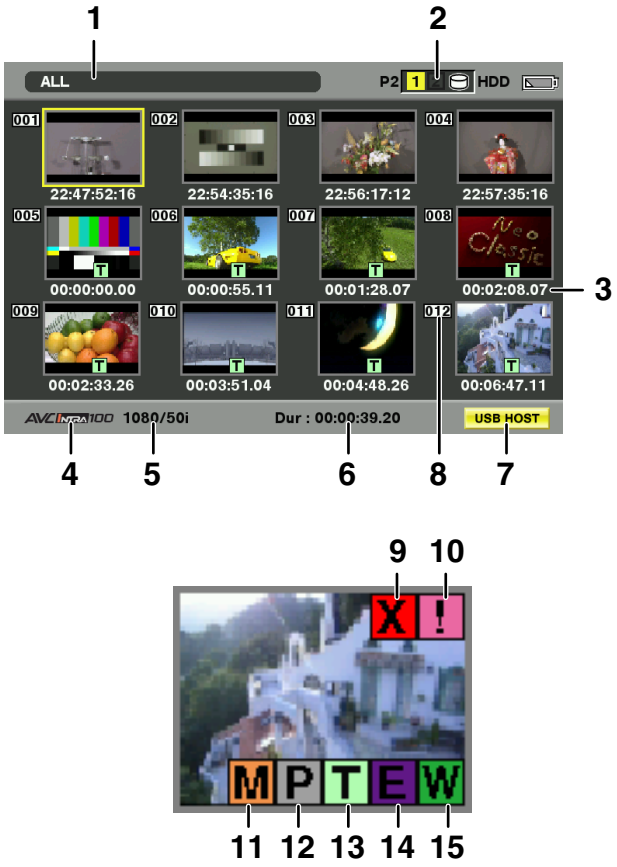


Thumbnail Screen

Press the THUMBNAIL button to display the thumbnail screen on the LCD monitor. Pressing the THUMBNAIL button again returns the display to the regular display. When switching is done from the regular screen display to the thumbnail screen display, all the clips will be displayed on the thumbnail screen.
Pressing the THUMBNAIL MENU button allows you to navigate the thumbnail menu.

◆ NOTE

When the TCG switch is set to "SET" to set the time code and user bits or when the camera menu is open, the THUMBNAIL button does not work.



1 Display Mode
Displays thumbnail types and other information screens.

ALL: Display all clips.

SAME FORMAT:
The clips in the same format as the system format are shown. To check the format, consult system mode and REC FORMAT indicated on the STATUS screen of the viewfinder.
For details, see [Viewfinder Screen Status Displays] (page 70).

SELECT: The clips selected with the SET button are shown.

MARKER:
Display clips with shot marks.

TEXT MEMO:
Display clips with text memo data.

SLOT n: This indicates a specific clip on the P2 card. (n: slot number 1 or 2)

UPDATING..:
Indicated when the unit is updating the screen or reading data. When the screen is being updated, the rotating icon is indicated.

For details, refer to [Switching the Thumbnail Display] (page 110).

2 Slot numbers and HDD status
This function indicates on which P2 card the selected clip is recorded. The number of the slot that contains the appropriate P2 card is indicated in yellow. If the clip is recorded on more than one P2 card, then the numbers of all slots that contain the appropriate cards are indicated. The numbers of the other slots are shown in white if they contain P2 cards.
When the following P2 card is inserted, the slot number is displayed with a pink frame.

- RUN DOWN CARD
  (A P2 card on which the maximum number of overwrites has been exceeded.)
- DIR ENTRY NG CARD
  (A P2 card on which the directory structure is not supported.)

The USB HDD section is indicated as follows:

- Other than the USB HOST mode: gray
- Not connected in USB HOST mode: gray
- HDD recognized and usable in USB HOST mode: white
- HDD recognized and thumbnails shown in USB HOST mode: yellow
- HDD recognized and data unable to be copied in USB HOST: red

3 Time Display
You can set this to display the time code at the start of clip recording, the user bits at the start of clip recording, the shooting time, the shooting date, the shooting date and time or USER CLIP NAME.

4 Recording mode
The recording mode for the clip on which the pointer is located is indicated.

5 System mode
The format for the clip on which the pointer is located is indicated.

6 Duration
The duration of the clip on which the pointer is located is indicated.

7 USB HOST mode indicator
Indicated when the mode has been switched to USB HOST.

8 Clip Number

The numbers set by the camera for all the clips recognized correctly by the P2 card. These numbers are allocated in chronological order, by shooting dates and times.

If clips cannot be played because of different recording formats, they are displayed in red.

9 X Defective Clip Indicator and ? Unknown Clip indicator

This marker is displayed for defective clips, which may result from a variety of causes, e.g., powering-down during recording.

Clip with yellow defective clip indicators can be restored in some cases. Please refer to [Restoring Clips] (page 114) for more information.

A clip displayed with a red defective clip indicator cannot be restored and must be deleted. If the clip cannot be deleted, format the P2 card.

? is displayed for clips such as those which differ in format from the P2 standard.

10 ! Incomplete Clip Indicator

Indicates that although a clip is recorded across multiple P2 cards, one of these cards is not inserted into a P2 card slot.

11 M Shot Mark Indicator

This marker is displayed for a clip with a shot mark attached. For details, refer to [Shot Marker (SHOT MARK) Recording Function] (page 42).

12 P Indicator for clips with proxy

This marker is displayed for clips with proxy attached.

13 T Text Memo Indicator

This marker is displayed for a clip with a text memo attached.

14 E Edit Copied Clip Indicator

In models which support edit copying, such as the AJ-HPM110, this marker is displayed on clips which have undergone edit copying. For more information about edit copying, see the instruction manual for a model that supports edit copying.

15 W Wide Clip Indicator

This marker is displayed for clips recorded with the 16:9 aspect ratio. However, it does not accompany clips in HD format.

Selecting Thumbnails

Multiple thumbnails can be randomly selected in the thumbnail screen.

1 Use the cursor buttons to move the pointer (yellow frame) to the desired clip and press the SET button.

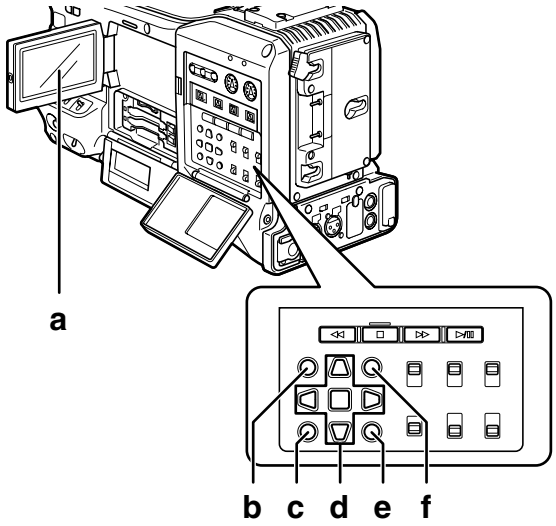
- The frame around the selected thumbnail changes to a blue frame. Press the SET button again to deselect the clip.

2 Additional clips can be selected by repeating step 1.

It is possible to display only the selected thumbnails in the thumbnail screen for playback. Please refer to [Switching the Thumbnail Display] (page 110) for more information.

◆ **NOTE**

- **To move the pointer to the first or last clip, hold down the SHIFT button and press the up and down cursor (△/▽) buttons.**
- **To select a sequence of clips, select the first clip and move the pointer to another clip. Then hold down the SHIFT button and press the SET button. This will select all clips from the clip selected first to the clip at the pointer and all clips in between.**
- **To cancel selected clips, hold down the SHIFT button while pressing the EXIT button.**



a LCD monitor
b THUMBNAIL button
c EXIT button
d ▲►▼◄cursor buttons
■ SET button
e THUMBNAIL MENU button
f SHIFT button

Playing back Clips

1 Press the THUMBNAIL button.

- The thumbnail screen appears on the LCD monitor.

2 Use the cursor buttons to move the pointer over the desired clip.

3 Press the PLAY/PAUSE button.

- The clip at pointer position is played back on the LCD monitor.
- After the clip at the cursor location has been played, subsequent clips are played back in order. When the last clip has been played, the thumbnail screen appears.

◆ **NOTE**

- **When playing back clips, it is not necessary to "select" the clips (blue frames around the thumbnails).**
- **Clips with clip numbers displayed in red cannot be played.**

- During playback, pressing the REW button starts 4X speed reverse playback, and the FF button starts 4X speed fast playback. Press the PLAY/PAUSE button to return to normal playback.
- During clip playback, pressing the PLAY/PAUSE button will temporarily stop (pause) the process.
  During a pause, pressing the REW button moves the pause position to the beginning of the clip. Pressing the REW button again moves the pause position to the beginning of the previous clip.
  During a pause, pressing the FF button moves the pause position to the beginning of the next clip.
- Pressing the STOP button during clip playback stops the playback and returns the display to the thumbnail screen.

◆ **NOTE**

- **When playback is stopped, the position of the pointer moves to the clip that was being played back, regardless of where playback started.**
- **When the PLAY/PAUSE button is pressed again, playback will start from the beginning of the clip on which the pointer is positioned. To begin playback from the last stop position, set PLAYBACK RESUME to on. Refer to [Setting the Thumbnail Display Mode] (page 120) for further details.**
- **After closing the thumbnail screen by pressing the THUMBNAIL button, pressing the PLAY/PAUSE button plays back the first clip (i.e., the clip with the earliest recording date and time), not the clip on which the pointer was last positioned.**

Switching the Thumbnail Display

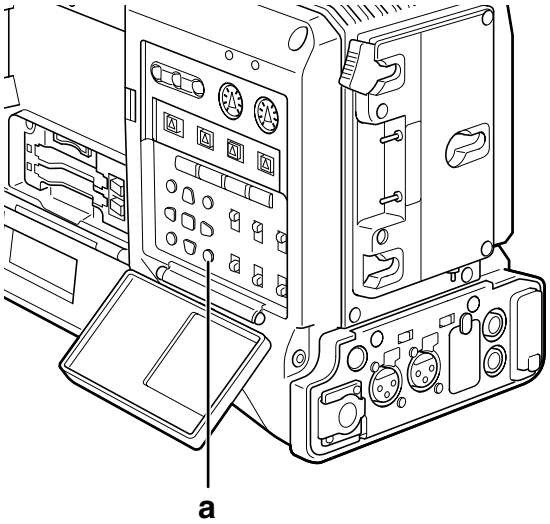
The display can be switched so that only those clips matching the specified conditions are displayed in the thumbnail screen.

1 Press the THUMBNAIL button.

- The thumbnail screen appears on the LCD monitor.

2 Press the THUMBNAIL MENU button.

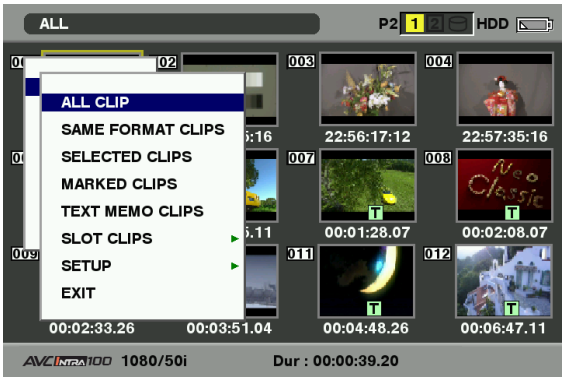
- The thumbnail menu opens.



a THUMBNAIL MENU button

3 Select THUMBNAIL from the thumbnail menu.

- Switch the thumbnail display by selecting one of the following items:



ALL CLIP:
Display all clips.

SAME FORMAT CLIPS:
Displays clips of the current system format.

SELECTED CLIPS:
Display randomly selected clips.

MARKED CLIPS:
Display clips with shot marks attached.

TEXT MEMO CLIPS:
Display clips with text memo data attached.

SLOT CLIPS:
Display clips recorded in the P2 card inserted in the specified slot. When this item is selected, “SLOT1” to “SLOT2” are displayed as a sub-menu. Select the desired slot to display the clips.

SETUP: Please refer to [Setting the Thumbnail Display Mode] (page 120) for information about this item.

EXIT: Close the sub-menu.

Changing thumbnails

It is possible to replace thumbnails with images that include previously attached text memos while images are recorded or played back.

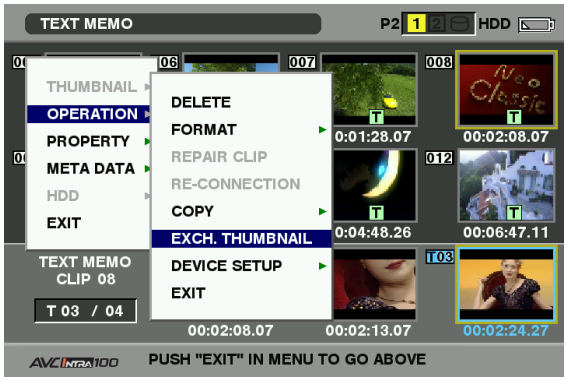
1 Add text memos to images that you intend to change.

- For details on how to add text memos, refer to [Text Memo Recording Function] (page 42).

2 Select THUMBNAIL → TEXT MEMO CLIPS to display thumbnails of the clips with text memos.

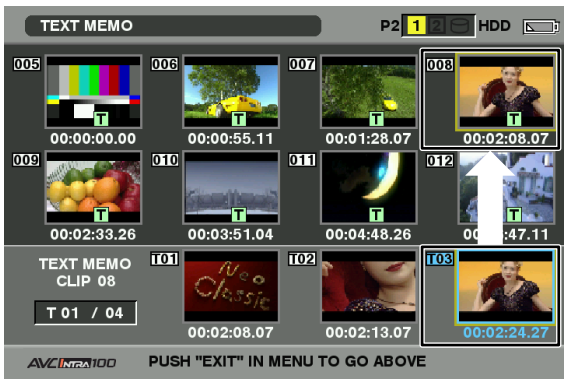
3 Place the pointer on the clip of the thumbnail that you intend to change, and then press SET button. Move the pointer to the text memo display on the lower row.

4 Select the thumbnail that you intend to replace, place the pointer on it, and then select OPERATION → EXCH. THUMBNAIL on the thumbnail menu.



5 Press SET button. When the YES/NO confirmation window is displayed, select YES by using the cursor button and the SET button.

- The menu closes and the thumbnail for the clip is replaced.



◆ NOTE

Display clip properties by selecting PROPERTY → CLIP PROPERTY on the thumbnail menu to confirm the position of the thumbnail (the number of frames from the top of the clip). Since thumbnails come generally from the top of the clip, "0" is displayed.

Shot Mark

A shot mark can be added to a clip thumbnail to distinguish this clip from other clips.

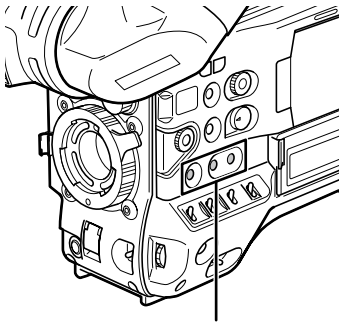
1 Press the THUMBNAIL button.

- The thumbnail screen appears on the LCD monitor.

2 Use the cursor buttons to move the pointer over the clip to which you want to attach a shot mark.

3 Press the USER button or RET button to which the shot mark function has been assigned.

- This adds a shot mark to the thumbnail of the clip at the pointer position.
  To delete a shot mark, place the pointer on the clip a second time and press the USER button or RET button to which the shot mark function has been assigned.



USER MAIN, USER1 and USER2 buttons

◆ NOTE

- **A shot mark can be attached during recording.**
- **Adding shot marks after recording stops, attaches the shot mark to the most recently recorded clip.**
  Please refer to [Shot Marker (SHOT MARK) Recording Function] (page 42) for more information.
- **When adding a shot mark to (or deleting the shot mark from) a clip recorded across multiple P2 cards, do this with all these P2 cards inserted into P2 card slots.**

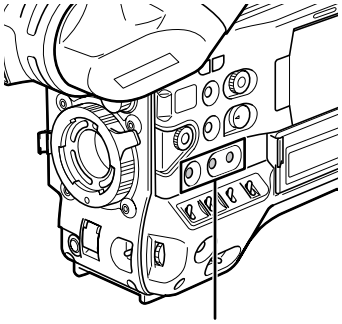
Text Memo

During recording or playback, you can add text memos to clips. Text memos can be used to play back clips at some point or break clips into chunks and copy the necessary portions.

Adding a text memo

Text memos can be added in one of the following ways.

- Press the USER button or RET button to which the text memo function has been assigned during recording or playback.
  This adds text memos where respective button was pressed.
- Pressing the USER button or RET button to which the text memo function has been assigned when a thumbnail screen is open, adds a text memo at the beginning of a clip.



USER MAIN, USER1 and USER2 buttons

◆ NOTE

One clip can have up to 100 text and voice memos in combination. Note that the unit is not capable of adding or showing voice memos.

Playing back a clip at the position where a text memo is recorded

1 Press the THUMBNAIL button.

- The thumbnail screen appears on the LCD monitor.

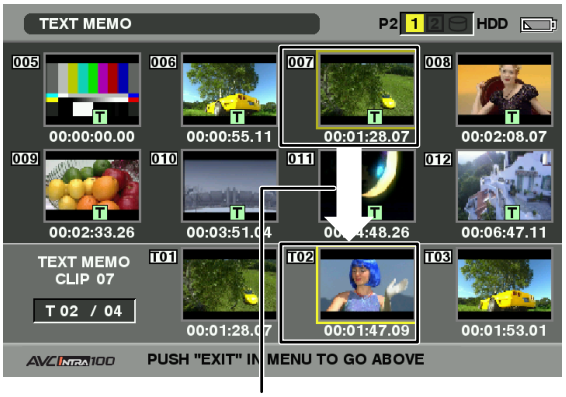
2 Press the THUMBNAIL MENU button and select THUMBNAIL → TEXT MEMO CLIPS from the thumbnail menu.

- The clip thumbnails with text memos attached are displayed in the upper section of the LCD monitor. The lower section of the LCD monitor shows information about the text memo on the clip selected by the pointer.



3 Move the pointer over the clip that contains the desired text memo to playback and press the SET button.

- The pointer moves to the lower part of the LCD monitor.



4 With the pointer located in the lower part, move the pointer to the desired text memo number using the cursor right and left buttons (◁/▷). Then, press the PLAY/PAUSE button.

- Playback will start from the time code position of the text memo where the pointer is located. If the STOP button is pressed during playback or playback finishes at the end of the clip, the thumbnail screen appears again with the pointer located on the text memo where playback started.
- Press the THUMBNAIL MENU button to select EXIT or press the EXIT button to return the pointer to the upper part of the thumbnail screen.

◆ **NOTE**

- **Pressing the REC button in the text memo screen will not start recording.**
- **Text memo thumbnails for AVC-Intra format clips that cannot be played back appear in gray.**

Deleting a text memo

1 Select the desired text memo by carrying out steps 1-3 for [Playing back a clip at the position where a text memo is recorded] (page 112).

2 Move the pointer to the desired text memo, and then press the SET button.

3 Press the THUMBNAIL MENU button to select OPERATION → DELETE from the thumbnail menu.

- YES and NO appear to confirm deletion. Use the cursor buttons and the SET button to select YES. The text memo is deleted.

Using a text memo to break a clip and copy the necessary portion

1 Select a desired text memo in a clip by carrying out steps 1-3 for [Playing back a clip at the position where a text memo is recorded] (page 112).

2 Move the pointer to the desired text memo, and then press the SET button.

- You can select more than one text memo.

3 Press the THUMBNAIL MENU button to select OPERATION → COPY.

4 Use the cursor buttons and the SET button to select the slot to copy to and select YES.

- Copying starts.
- The portion between the selected text memo and the next one is copied. If no text memo is found after the selected memo, then the remainder of the clip after the selected text memo is copied.
- If multiple text memos are selected, the selected sections are copied.
- When the clip is being copied, the unit indicates the progress of the copy process and cancellation status. To discontinue the copy process, press the SET button. Then, a YES/NO confirmation screen is displayed. Use the cursor buttons and SET button to select YES.

◆ **NOTE**

In clip division and copying using the text memo function, the area copied may be automatically modified depending on the recording format of the clip.

Deleting Clips

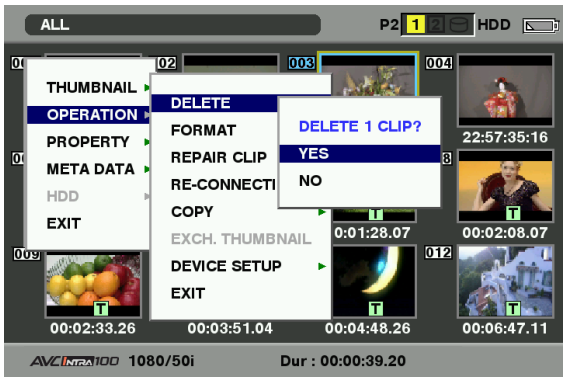
1 Press the THUMBNAIL button.

- The thumbnail screen appears on the LCD monitor.

2 Use the cursor buttons to move the pointer to the clip to be deleted and press the SET button to select the clip.

3 Press the THUMBNAIL MENU button and select OPERATION → DELETE from the thumbnail menu.

4 The following screen appears. Use the cursor buttons and the SET button to select YES.



- The clip is deleted. All selected clips (in blue frames) are deleted by this operation.

◆ NOTE

To interrupt deleting, press the SHIFT and EXIT buttons or the SET button to cancel the operation.
Partially deleted clips cannot be restored by canceling.

Restoring Clips

Restores clips that are defective as a result of sudden powering-down during recording, or removal of the P2 card being accessed.

◆ NOTE

Only those clips with yellow defective clip indicators can be restored. Delete the clips with red defective clip indicators. If the clip cannot be deleted, format the P2 card.
During restoration of the clips, however, the defective-clip indicator may change from yellow to red, resulting in inability to restore the clips.

1 Press the THUMBNAIL button.

- The thumbnail screen appears on the LCD monitor.

2 Use the cursor buttons to move the pointer over the clip you want to restore (defective clips are indicated by defective clip indicators).
Press the SET button to select the clip.

3 Press the THUMBNAIL MENU button, and select OPERATION → REPAIR CLIP from the thumbnail menu.

- When a confirmation screen asks you to confirm that you want to repair the clip, use a cursor button and the SET button to select YES if you want to restore the clip.

Reconnection of Incomplete Clips

Incomplete clips may be generated when clips recorded on multiple P2 cards (connected clips) are separately copied to different cards. The reconnection function generates one clip (the original, connected clip) from incomplete clips.

1 Press the THUMBNAIL button.

- The thumbnail screen appears on the LCD monitor.

2 Use the cursor and SET button to select incomplete clips to reconnect.

- Usually, thumbnails of incomplete clips (clips with marker) are displayed in line.

3 Press the THUMBNAIL MENU button and select OPERATION → RE-CONNECTION from the thumbnail menu.

- When a confirmation screen asks you to confirm that you want to reconnect the clip, use a cursor button and the SET button to select YES if you want to reconnect the clip.

◆ NOTE

Clips that are connected as a group must be grouped together or they will be displayed as incomplete clips.

Copying Clips

Selected clips can be copied to the P2 card in the desired slot or SD memory card.

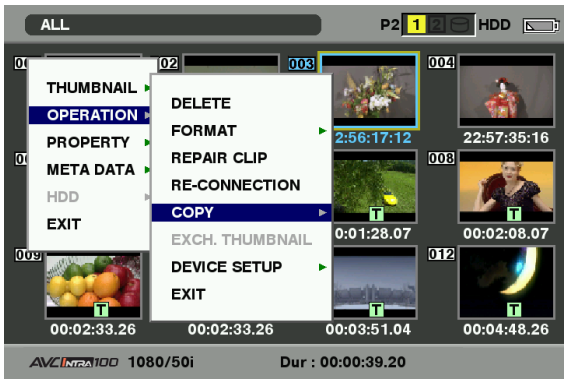
1 Press the THUMBNAIL button.

- The thumbnail screen appears on the LCD monitor.

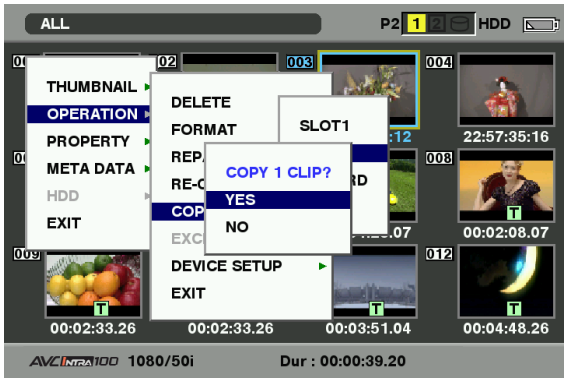
2 Use the cursor buttons to move the pointer to the desired clip and press the SET button.

3 Press the THUMBNAIL MENU button and select OPERATION → COPY from the thumbnail menu.

- Select slot 1-2 or SD memory card as the destination.



- When a confirmation screen asks you to confirm that you want to copy the clip, use a cursor button and the SET button to select YES if you want to copy the clip.



◆ NOTE

- **Do not turn off the power or remove a P2 card while data is being copied. Otherwise the P2 card may fail or defective clips may be generated. Delete any defective clips that are generated and copy them again.**
- **When clips are copied to P2 cards, all the information on the clips is copied. However, when they are copied to the SD memory card *1, video and sound information is not copied, only thumbnails, clip metadata, icons, voice memo, text memo, proxy, and real-time metadata.**
- **When there is insufficient recording capacity on the destination, the message "LACK OF REC CAPACITY!" is displayed, and copying will not proceed. When clips selected for copying contain defective clips, the message "CANNOT COPY" appears and copying will not proceed. If the selected clips include clips already on the destination P2 card, copying will not proceed.**
- **To interrupt copying, press the SHIFT and EXIT buttons or the SET button. The clip that was being copied is deleted at the destination.**
- **When identical clips exist on the destination card, the "OVERWRITE?" is displayed. Select "YES" or "NO".**

***1 Regarding SD memory cards to be used, see [SD memory card precautions] (page 21).**

Setting of Clip Meta Data

Information such as the name of the person who shot the video, the name of the reporter, the shooting location, or a text memo can be read from the SD memory card, and can be recorded as Clip Meta Data.

Reading the SD memory card that contains the Clip Meta Data (metadata upload file).

1 Insert the SD memory card that contains the Clip Meta Data (metadata upload file).

2 Press the THUMBNAIL button.

- The thumbnail screen appears on the LCD monitor.

◆ NOTE

Press the THUMBNAIL button while pressing DISP/MODE CHK button when a thumbnail is displayed to move to step 4.

3 Press the THUMBNAIL MENU button and Select META DATA → LOAD from the thumbnail menu, and press the SET button.



4 Names of metadata upload files stored on the SD memory card are displayed *2. Select the desired files using the cursor buttons, and choose YES.

- Uploading starts.
- Uploaded metadata is retained even if the power is turned off.
- For more information on confirmation of uploaded data, see [Checking and modifying read metadata] (page 116).

*2 Press the cursor button (▷) to display the full name of the file, up to 100 characters, at the cursor position. Press the cursor button (◁) to return to the previous location.

Clip Meta Data items

Clip Meta Data includes the following items: Underlined items can be set by reading the metadata upload file on the SD memory card. Other items are set automatically during shooting. Using the latest update version of P2 Viewer, metadata upload files can be written to SD memory cards using a PC. Download the latest update version of P2 Viewer from the following URL and install it on your PC:

https://eww.pavc.panasonic.co.jp/pro-av/

Regarding SD memory cards to be used, see [SD memory card precautions] (page 21).

◆ NOTE

Files edited using software other than P2 Viewer are displayed as "UNKNOWN DATA!", and may not be read.

GLOBAL CLIP ID:
Displays the global clip ID, which indicates the shooting status of the clip.

USER CLIP NAME:
Displays the clip name specified by the user.*1

VIDEO: Displays [FRAME RATE] (frame rate of the clip), [PULL DOWN], and [ASPECT RATIO].

AUDIO: [SAMPLING RATE] (sampling frequency of recorded sound) and [BITS PER SAMPLE] (digitized bit[s] of recorded sound).

ACCESS: Displays [CREATOR] (person who recorded the clip), [CREATION DATE] (date when the clip was recorded), [LAST UPDATE DATE] (date of the latest update of the clip), and [LAST UPDATE PERSON] (person who made the latest update of the clip).

DEVICE: Displays [MANUFACTURER] (name of the device manufacturer), [SERIAL NO.] (serial number of the device) and [MODEL NAME] (model name of the device).

SHOOT*2: Displays [SHOOTER] (name of the person who shot the video), [START DATE] (start date of shooting), [END DATE] (end date of shooting), and [LOCATION] ALTITUDE/LONGITUDE/LATITUDE/SOURCE/PLACE NAME (altitude, longitude, latitude, and source of the information and name of the location).

SCENARIO:
Displays [PROGRAM NAME], [SCENE NO], and [TAKE NO].

NEWS: Displays [REPORTER] (name of the reporter), [PURPOSE] (purpose of shooting), and [OBJECT] (object of shooting).

MEMO*3: Displays [NO.] (the number of the text memo), [OFFSET] (location of the frame with added text memo in relation to the beginning of the clip), [PERSON] (person who recorded the text memo added to the clip), and [TEXT] (contents of the text memo).

THUMBNAIL:
Displays the location of the frame (frame offset) and the size (height and width) of the image selected as the thumbnail image.

*1 The USER CLIP NAME recording method is selectable. For details, refer to [Selecting the USER CLIP NAME recording method] (page 117).

*2 During recording, the camera does not automatically set altitude, latitude and longitude of the shoot. Such data can be set in the property of a recorded clip.

*3 Be sure to enter [TEXT] when entering MEMO. It is not possible to record only [PERSON] or [OFFSET].

◆ NOTE

• This unit only displays printable ASCII characters.

Checking and modifying read metadata

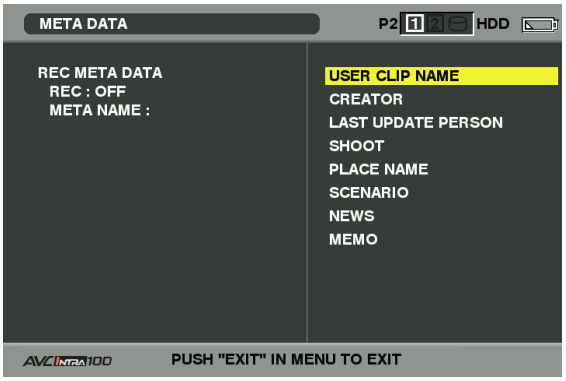
The unit allows you to check details of metadata read from SD memory cards.

1 Press the THUMBNAIL button.

• The thumbnail screen appears on the LCD monitor.

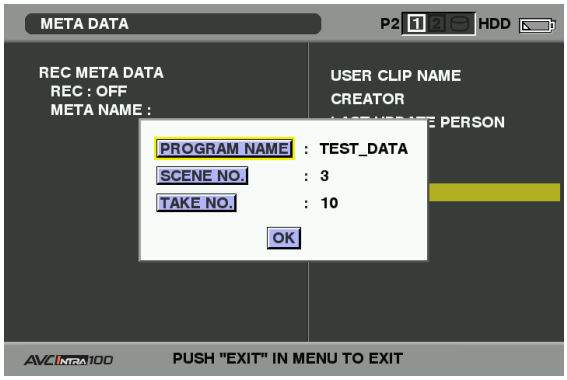
2 Press the THUMBNAIL MENU button to select META DATA → PROPERTY from the thumbnail menu.

• Then the screen shown below appears.



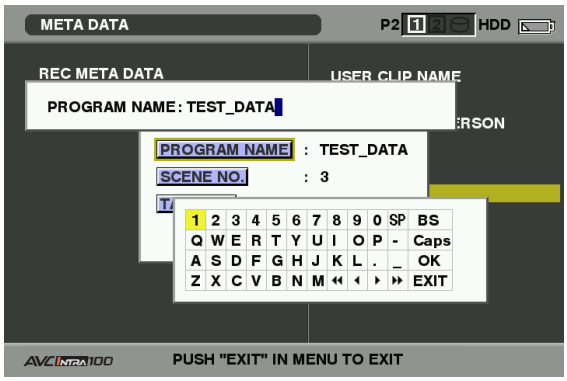
3 Use the cursor buttons to move the pointer to the item to confirm and press the SET button.

- Use this function to check loaded metadata settings.



4 While viewing metadata settings, use the cursor buttons to move the pointer to the desired option. Then, press the SET button.

- A soft keyboard screen is displayed, allowing you to modify the setting.



To set whether or not the uploaded metadata is recorded

Set “ON”/“OFF” in META DATA → RECORD from the thumbnail menu. The factory setting is “OFF”.

Selecting the USER CLIP NAME recording method

Select META DATA → USER CLIP NAME from the thumbnail menu to select the recording method. Two options are available: TYPE1 and TYPE2.

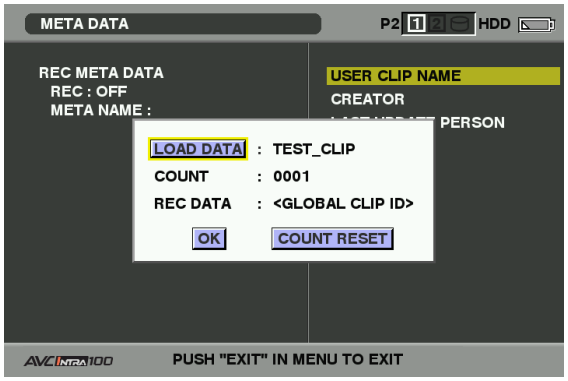
●TYPE1(Factory defaults)

	USER CLIP NAME to be recorded
If clip metadata has been read in	Uploaded data
If no clip metadata has been read in or if the setting for recording clip metadata has been turned off	Same as GLOBAL CLIP ID (UMID data)

●TYPE2

	USER CLIP NAME to be recorded
If clip metadata has been read in	Uploaded data + COUNT value*1
If no clip metadata has been read in or if the setting for recording clip metadata has been turned off	Same as CLIP NAME

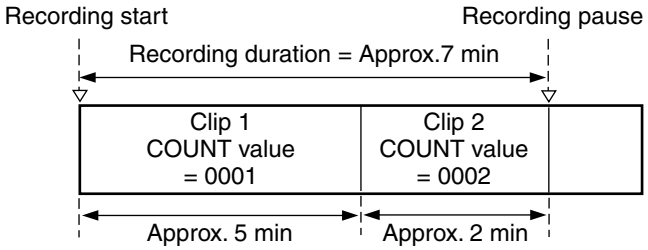
*1 The COUNT value is indicated as a four-digit number. The COUNT value is incremented each time a new clip is captured if clip metadata has been read in and TYPE2 has been selected as the recording method. The COUNT value can be reset using the following procedure. Select META DATA → PROPERTY from the thumbnail menu, then select USER CLIP NAME to display the menu shown below. Select “COUNT RESET” with the cursor and press the SET button to reset the COUNT value to 1.



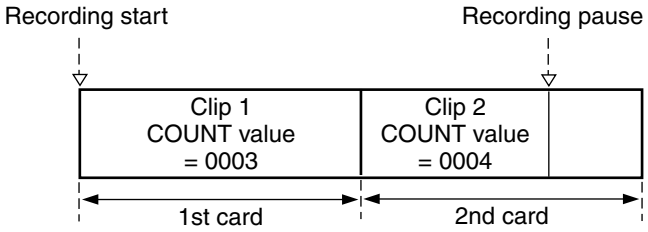
◆ NOTE

When an 8 GB or larger capacity P2 is used and the recording session exceeds the prescribed duration (DVCPRO HD and the AVC-Intra100: about 5 minutes; AVC-Intra50: about 10 minutes) or spans more than one P2 card, the recording will automatically be split into separate clips. At this time, each clip will be provided with its own COUNT value.

Example of recording (DVCPRO HD) a clip on one P2 card:



Example of recording a clip on two P2 cards:



If the clip thumbnails are displayed as shown in the example above or their properties are indicated using a P2 device, the thumbnail and COUNT value of clip 1 will be displayed.

Clearing uploaded metadata

Select META DATA → INITIALIZE from the thumbnail menu, and press the SET button. Select YES when the confirmation screen is displayed.

Setting of Proxy (optional)

Installing the video encoder card (AJ-YAX800G, optional accessory) in P2 card slot 2 makes it possible to set up the proxy recording function.
The video encoder card is not recognized when inserted if the power for the unit is turned on. Insert the video encoder card after turning off the power for the unit.
Select OPERATION → DEVICE SETUP → PROXY from the thumbnail menu to specify the setting.
For details on how to install and set up the video encoder card, refer to the User's Guide of the video encoder card.

◆ NOTE

When "PROXY CARD ERROR" is indicated in the viewfinder, either check the video encoder card or set the unit so that proxy recording is not performed.



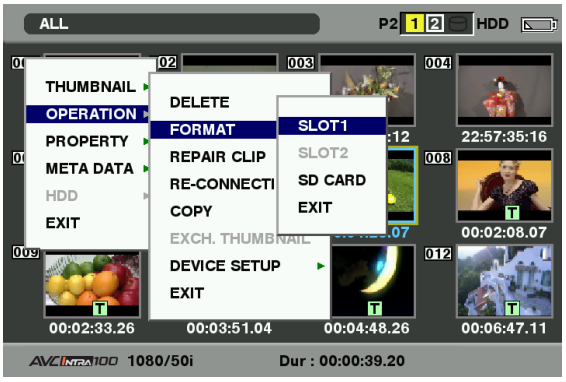
Formatting a P2 Card

1 Press the THUMBNAIL button.

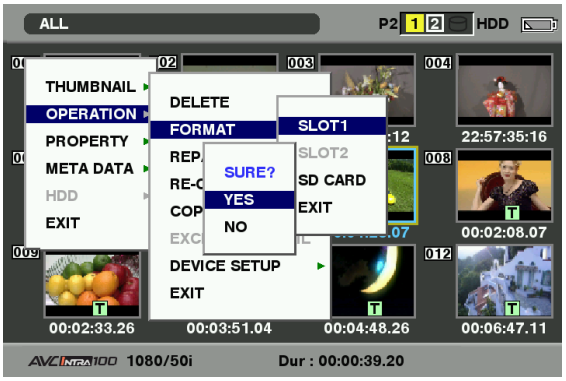
- The thumbnail screen appears on the LCD monitor.

2 Press the THUMBNAIL MENU button and select OPERATION → FORMAT from the thumbnail menu.

- When the screen shown below appears, select the slot number of the P2 card you want to format and press the SET button.
- Select EXIT if formatting is not required.



3 The following screen appears. Use the cursor buttons and the SET button to select YES.



- The selected P2 card is formatted.

◆ NOTE

Check that no important data remains on a card before formatting since data erased by formatting cannot be recovered.

Formatting SD memory cards

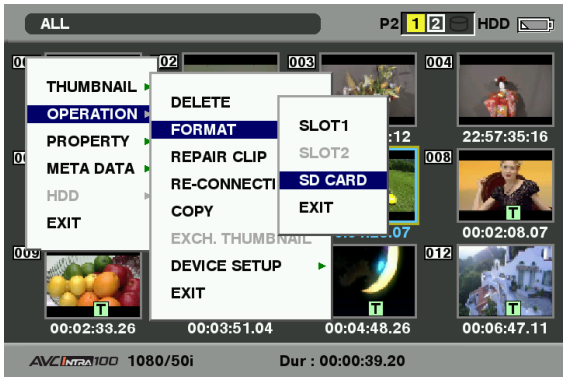
SD memory cards can also be formatted from the thumbnail screen. With an SD memory card inserted into the unit, perform the following operation:

1 Press the THUMBNAIL button.

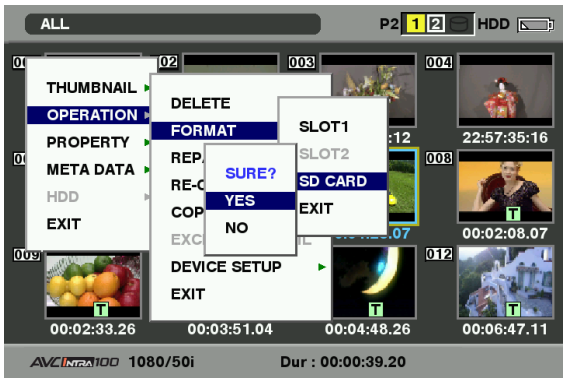
- The thumbnail screen appears on the LCD monitor.

2 Press the THUMBNAIL MENU button and select OPERATION → FORMAT from the thumbnail menu.

- Select “SD CARD” and press the SET button when the screen shown below appears.
- Select “EXIT” if formatting is not required.



3 The following screen appears. Use the cursor buttons and the SET button to select YES.



- The SD memory card is formatted.

◆ NOTE

- **You can also use the menu option SD CARD FORMAT in the CARD FUNCTIONS screen to format SD memory cards.**
  For details, refer to [Formatting, Writing and Reading an SD memory card] (page 86).
- **Check that no important data remains on a card before formatting since data erased by formatting cannot be recovered.**

Setting the Thumbnail Display Mode

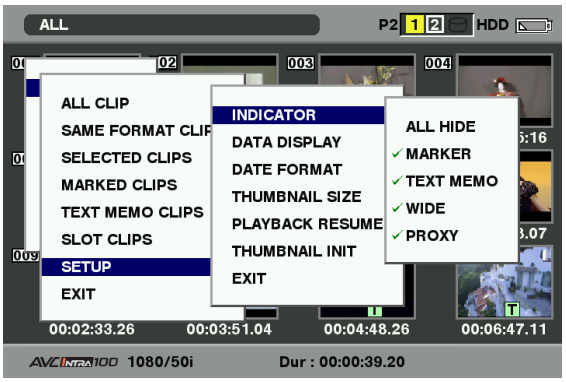
The thumbnail display mode can be customized to suit your preferences.

1 Press the THUMBNAIL button.

- The thumbnail screen appears on the LCD monitor.

2 Press the THUMBNAIL MENU button and select THUMBNAIL → SETUP from the thumbnail menu.

- The following screen appears.



INDICATOR:

Select which indicators you want to show on thumbnails and which you want to hide.

- **ALL HIDE:**
  ON: No indicators are displayed.
  OFF: Indication/No indication will be set depending on the following menu. The factory settings are as follows.
- **MARKER:**
  Switches the shot mark marker between indication and no indication (ON/OFF). The factory setting is ON (indication).
- **TEXT MEMO:**
  Switches the text memo marker between indication and no indication (ON/OFF). The factory setting is ON (indication).
- **WIDE:**
  Switches the wide marker between indication and no indication (ON/OFF). The factory setting is ON (indication).
- **PROXY:**
  Switches the proxy marker between indication and no indication (ON/OFF). The factory setting is ON (indication).

DATA DISPLAY:

The time display field of the clip offers a choice of Time Code (TC), User Bits (UB), Shooting Time (TIME), Shooting Date (DATE), Shooting Date and Time (DATE/TIME) or USER CLIP NAME. The factory setting is Time Code.

DATE FORMAT:

You can specify the display order for the shooting date as either Year/Month/Day (Y-M-D), Month/Day/Year (M-D-Y) or Day/Month/ Year (D-M-Y).

The factory setting is Month/Day/Year.

This setting is reflected in the recording date shown in the clip property and the shooting date shown when DATE is selected under the item DATA DISPLAY.

THUMBNAIL SIZE:

For the size of thumbnails displayed on one screen, either LARGE (3 X 2 thumbnails displayed) or NORMAL (4 X 3 thumbnails displayed) can be selected. The factory default value is NORMAL.

PLAYBACK RESUME:

Selecting a position to restart playback after stopping playback on the thumbnails screen using the STOP button.

ON: Playback starts from the stop position.

OFF: Playback starts from the beginning of the clip indicated by the pointer.

Note that if the pointer is moved after stopping playback, the playback will restart from the beginning of the clip indicated by the pointer regardless of this setting. Also, attempting to play back from the end of all the available clips will cause the screen to flash momentarily, indicating that the there are no more clips which can be played back.

THUMBNAIL INIT:

Returns the above thumbnail display settings to their factory default values. Move the cursor to this option, and press the SET button. Select YES in the confirmation screen that appears.

EXIT:

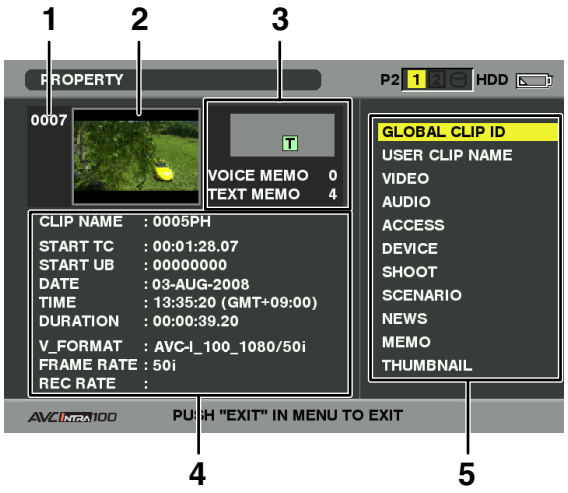
Returns to the previous menu.

Properties

Properties display clip properties and P2 card status. It is possible to edit and rewrite recorded clip metadata while clip properties are displayed.

Clip Property

From the thumbnail menu, select PROPERTY → CLIP PROPERTY. The following screen appears.



1 Clip Number

2 Thumbnail

3 Clip Information

Indicates the indicators added to the clip and the number of text and voice memos added to the clip. The mark appears if the clip is recorded on a write-protected P2 card.

◆ NOTE

The unit is not capable of recording or playing back voice memos.

4 Clip Information

Displays detailed information about the clip.

CLIP NAME:

Display clip names.

START TC:

The time code value at the start of the recording.

START UB:

The user bit value at the start of the recording.

DATE:

The date of the recording.

TIME:

The time at the start of the recording.

DURATION:

The time length of the clip.

V_FORMAT:

The recording format for the clip.

FRAME RATE:

The frame rate for the playback.

REC RATE:
The recording frame rate is displayed. (Only displayed for clips recorded using native recording with the VFR function.)

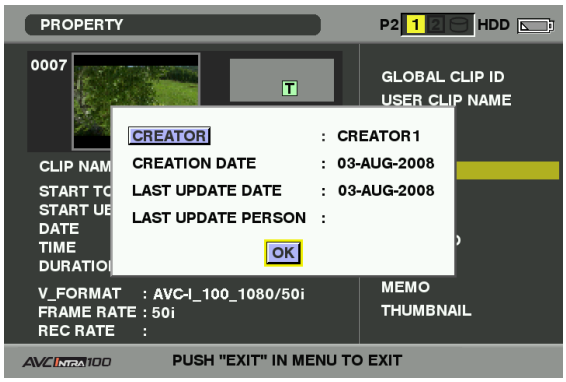
5 Clip Meta Data
Displays more detailed data about the clip. Use the cursor buttons to move the pointer, and press the SET button to check the detailed content. For more information on displayed metadata, see [Setting of Clip Meta Data] (page 115).

Modification of recorded clip metadata

1 Display the window for detailed clip metadata that you intend to modify in the clip properties window.

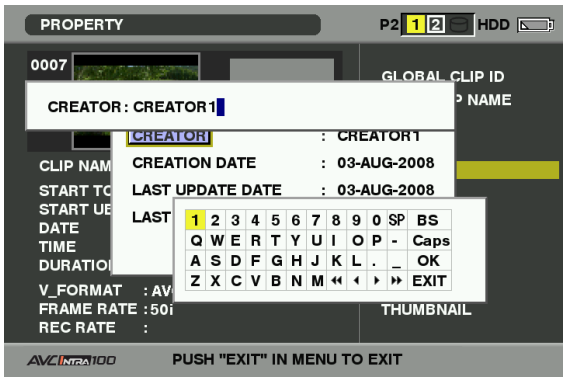
2 Place the cursor on the item to be modified using the cursor button.

- The metadata that can be modified are shown like [CREATOR] in the following figure.



3 Press the SET button.

- The input window (soft keyboard) for modifying metadata is displayed.
- Use the keyboard to modify the metadata.



Use the keyboard operations described in [Checking and modifying read metadata] (page 116).

4 Press OK on the keyboard to write the modified metadata on the clip and return to the metadata window.

◆ NOTE

- **LOCATION (recording location data) data for a SHOOT cannot be deleted independently. Thus by setting ALTITUDE to empty will also delete the LONGITUDE and LATITUDE settings.**
- **The metadata for a clip with the ! incomplete clip indicator cannot be modified. Metadata on clips recorded on multiple P2 cards must be modified when all P2 cards that contain the data are inserted.**
- **Any MEMO with 101 characters or more cannot be modified.**

P2 Card Status Display

■ P2 Card Status Display Settings

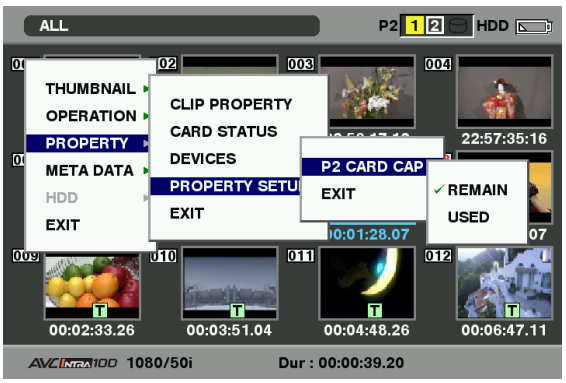
Select PROPERTY → CARD STATUS from the thumbnail menu to set the desired indication mode (remaining free space or used memory capacity) for the P2 card status display.

1 Press the THUMBNAIL button.

- The thumbnail screen appears on the LCD monitor.

2 Press the THUMBNAIL MENU button and select PROPERTY → PROPERTY SETUP → P2 CARD CAP from the thumbnail menu.

- The following screen appears. Select the P2 card status display settings from the P2 CARD CAP menu option.



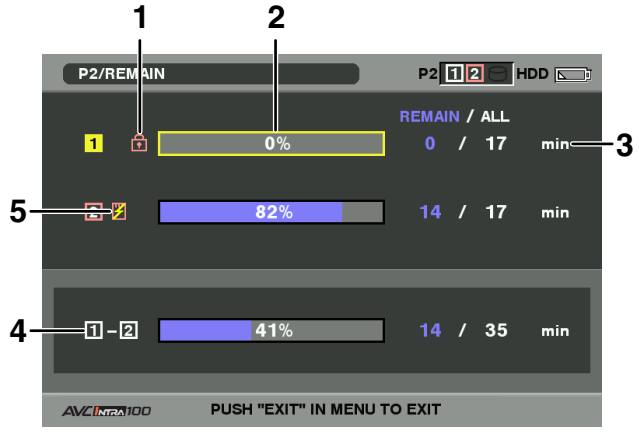
REMAIN:
Show remaining free space on the P2 card as the P2 card status display. (Factory setting)

USED:
Show used memory capacity on the P2 card as the P2 card status display.

■ Contents of P2 Card Status Display Settings

From the thumbnail menu, select PROPERTY → CARD STATUS. The following screen appears.

When “REMAIN” is selected:



1 Write-protect Mark

The 🔒 mark appears if the P2 card is write-protected.

2 P2 Card Status (remaining free space)

The remaining memory capacity of the P2 card is indicated by a bar graph and percentage. The bar graph indicator moves to the left as the remaining free space decreases. The following indications may appear, depending on the card status:

FORMAT ERROR!:

An unformatted P2 card is inserted.

NOT SUPPORTED!:

An unsupported card is inserted in the camera.

NO CARD!:

No P2 cards are inserted.

Use the cursor button to place the cursor on the P2 card for data you want to access and press the SET button to display detailed information about the P2 card to check individual information such as the serial number and the user ID.

3 P2 Card Remaining Capacity/Total Capacity

Displays the P2 card remaining capacity and total capacity in minutes. The total remaining capacity for each P2 card will not show actual capacity since only time in minutes is displayed.

Note that the indicated capacity will vary according to the frame rate in native recording with VFR operation.

4 Total remaining free space for the slot

Displays the total remaining free space for both slots. Please note that the remaining capacity of a write-protected P2 card is not included in the total remaining capacity.

5 Warning symbol

Inserting the following type of P2 cards will display the (⚠) symbol.

RUN DOWN CARD:

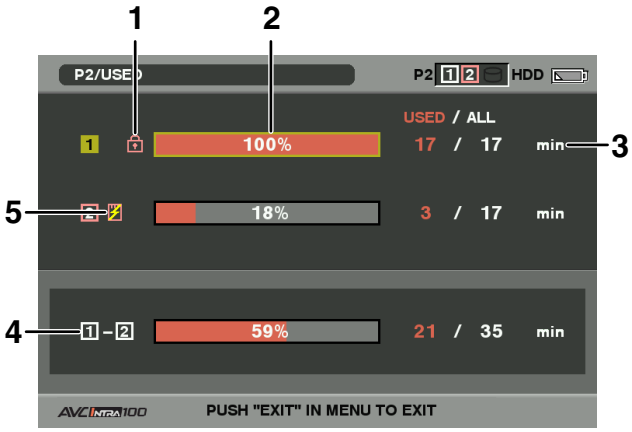
The maximum number of overwrites on the P2 card has been exceeded.

DIR ENTRY NG CARD:

The directory structure on the P2 card is not supported.

For details on P2 card status indications, refer to [2. P2 Card Status (remaining free space)].

When “USED” is selected:



1 Write-protect Mark

The 🔒 mark appears if the P2 card is write-protected.

2 P2 Card Status (used memory capacity)

The used memory capacity of the P2 card is indicated by a bar graph and a percentage figure. The bar graph indicator moves to the right as the used memory capacity increases.

The following indications may appear, depending on the card status:

FORMAT ERROR!:

An unformatted P2 card is inserted.

NOT SUPPORTED!:

An unsupported card is inserted in the camera.

NO CARD!:

P2 cards are not inserted.

Use the cursor button to place the cursor on the P2 card for data you want to access and press the SET button to display detailed information about the P2 card to check individual information such as the serial number and the user ID.

3 P2 Card used memory capacity/Total Capacity

Displays the used memory capacity on a P2 card and the total capacity, in minutes. Because fractions are truncated, the figure shown for used memory capacity on a P2 card may differ from the figure for total capacity. The used memory capacity of a write-protected P2 card is displayed as 100%.

Note that the indicated capacity will vary according to the frame rate in native recording with VFR operation.

4 Total used memory capacity for all slots

Displays the total used memory capacity for both slots.

5 Warning symbol

Inserting the following type of P2 cards will display the (⚠) symbol.

RUN DOWN CARD:

The maximum number of overwrites on the P2 card has been exceeded.

DIR ENTRY NG CARD:

The directory structure on the P2 card is not supported.

For details on P2 card status indications, refer to [2. P2 Card Status (used memory capacity)]

SD memory card Status Display

The status display enables a confirmation of the SD memory card formatted condition, available memory capacity etc. From the thumbnail menu, select PROPERTY → DEVICES → SD CARD.

If the format is compatible with SD standards, the message

SD STANDARD : SUPPORTED

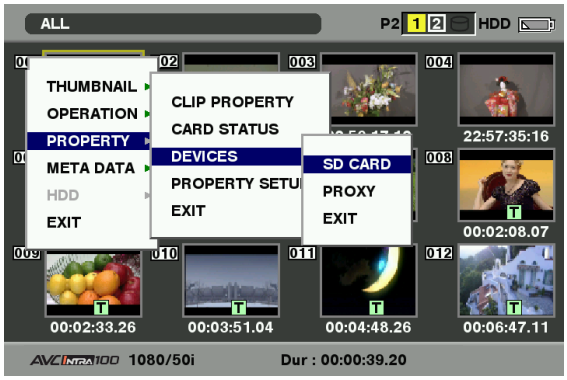
If the format is not compatible with SD standards, the message

SD STANDARD : NOT SUPPORTED

is displayed. If this is the case, writing or reading will not be successful. Format the card with the unit. For more information on formatting SD memory cards, see [Formatting SD memory cards] (page 120).

◆ NOTE

The indication of remaining capacity on an SD memory card (PROXY REM) provides only a rough estimate of remaining capacity and may differ from actual remaining capacity. SD and SDHC cards with Speed Class Ratings may indicate recording times that are significantly lower than actual capacity, especially when used for recording a large number of short video clips. The remaining capacity is displayed only when proxy recording is set up to record on an SD memory card. For details on setup procedures, refer to the User's Guide of the video encoder card (AJ-YAX800G, an optional accessory).



Video Encoder Card Status Display (optional)

Attaching the video encoder card (AJ-YAX800G, optional), select PROPERTY → DEVICES → PROXY from the thumbnail menu.

The slot in which the video encoder card is inserted, and version information is displayed.

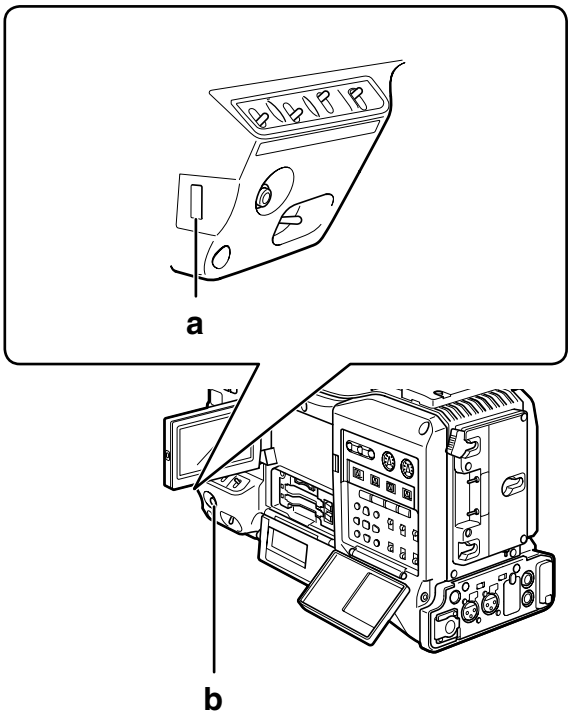
Chapter 7 Menu Operations

Viewfinder and LCD Menus

Using the menus

Use the setup menus to change the settings to suit the scenes you are shooting or what you are recording.

- If the thumbnail menu is displayed, press the THUMBNAIL button to clear the display.
- The menu items indicated in the blue characters cannot be used.



a JOG dial button

b MENU button

1 Press the MENU button to end any mode other than recording.

- Hold down the MENU button for about 1 second.
- The function screen appears in the viewfinder and on the LCD screen.

```
MAIN MENU

1.SCENE FINE
2.SYSTEM SETUP
3.SW MODE
4.RECORDING SETUP
5.AUDIO SETUP
6.OUTPUT SEL
7.DISPLAY SETUP
8.BATTERY SETUP
▼
PUSH MENU TO EXIT
```

2 Use the JOG dial button (or the Up and Down cursor buttons) to highlight the function you want to change.

```
MAIN MENU

1.SCENE FINE
2.SYSTEM SETUP
3.SW MODE
4.RECORDING SETUP
5.AUDIO SETUP
6.OUTPUT SEL
7.DISPLAY SETUP
8.BATTERY SETUP
▼
PUSH MENU TO EXIT
```

3 Press the JOG dial button to display the items.

```
SW MODE

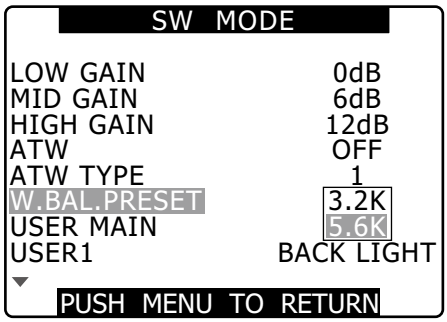
LOW GAIN      ▶   0dB
MID GAIN          6dB
HIGH GAIN        12dB
ATW              OFF
ATW TYPE           1
W.BAL.PRESET    3.2K
USER MAIN       Y GET
USER1       BACK LIGHT
▼
PUSH MENU TO RETURN
```

4 Use the JOG dial button to highlight the item you want to change.

```
SW MODE

LOW GAIN          0dB
MID GAIN          6dB
HIGH GAIN        12dB
ATW              OFF
ATW TYPE           1
W.BAL.PRESET  ▶  3.2K
USER MAIN       Y GET
USER1       BACK LIGHT
▼
PUSH MENU TO RETURN
```

5 Use the JOG dial button to change the setting value.



6 To change other settings, repeat steps 4 and 5.

- When you finish, press the MENU button to return to the function screen.

7 To change other functions, repeat steps 2 to 5.

- To exit the function screen and return to the normal screen, press the MENU button again.

◆ **NOTE**

■Direct close function

When the MENU button is pressed and held down after making a menu setting, the setting menu screen closes without first returning to the previous setting menu.

■To quickly change settings (MASTER PED and H PHASE only)

• Fast UP

Hold down the JOG dial button while turning it upwards and maintain this position.

• Fast DOWN

Hold down the JOG dial button while turning it downwards and maintain this position.

Initializing the menu settings

The menu settings contain both the user file settings and the scene file settings. You can initialize them separately.

To initialize scene files (i.e. all the settings other than the scene file settings)

Select INITIAL in USER FILE of the OTHER FUNCTIONS screen. The current menu settings of user file will return to the factory settings.

To initialize the scene file

From the 6 scene files, select the one you want to initialize with the SCENE FILE dial. Then in the SCENE FILE screen, LOAD/SAVE/INIT, select INITIAL.

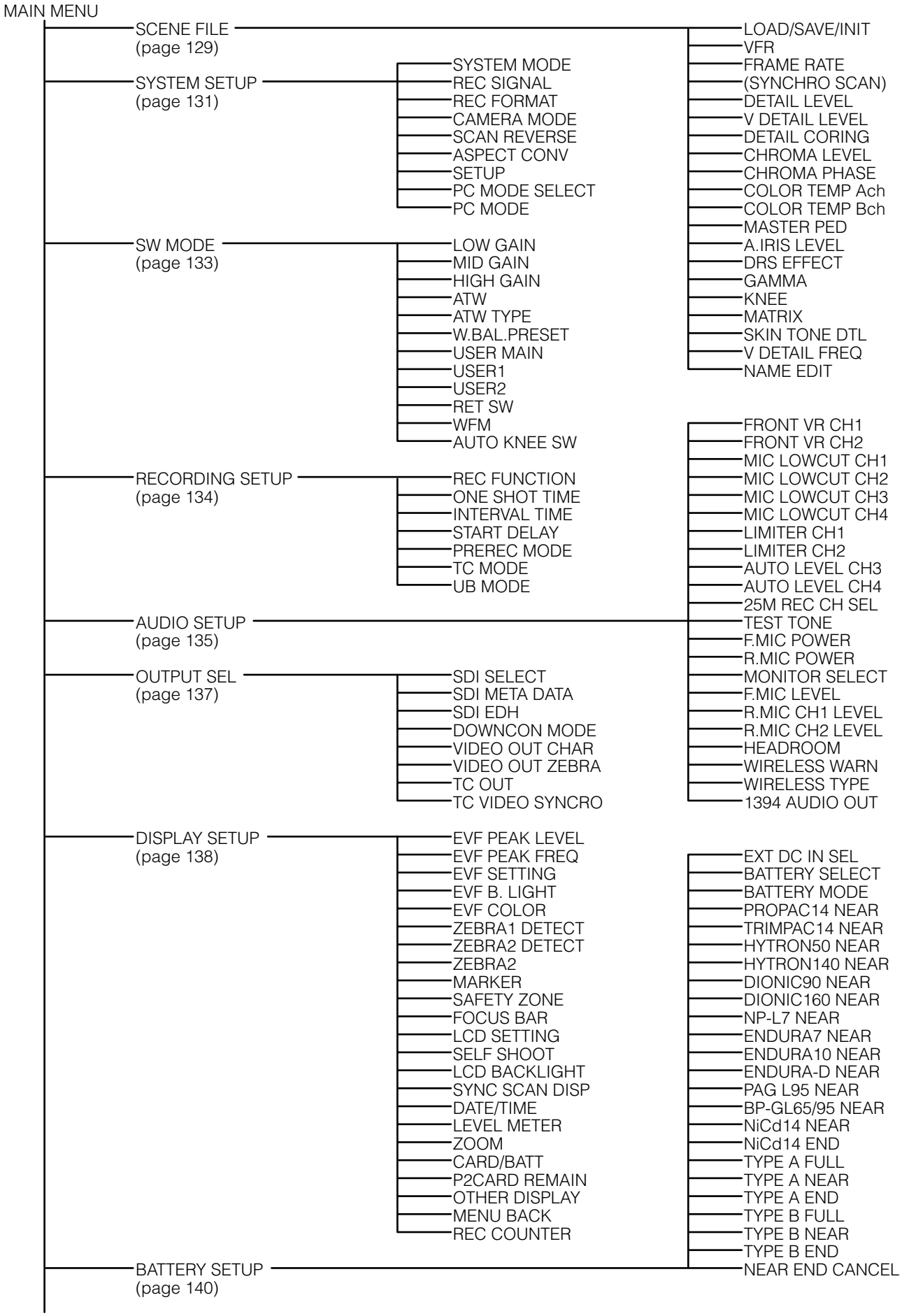
The settings for only the selected scene file are returned to the factory settings.

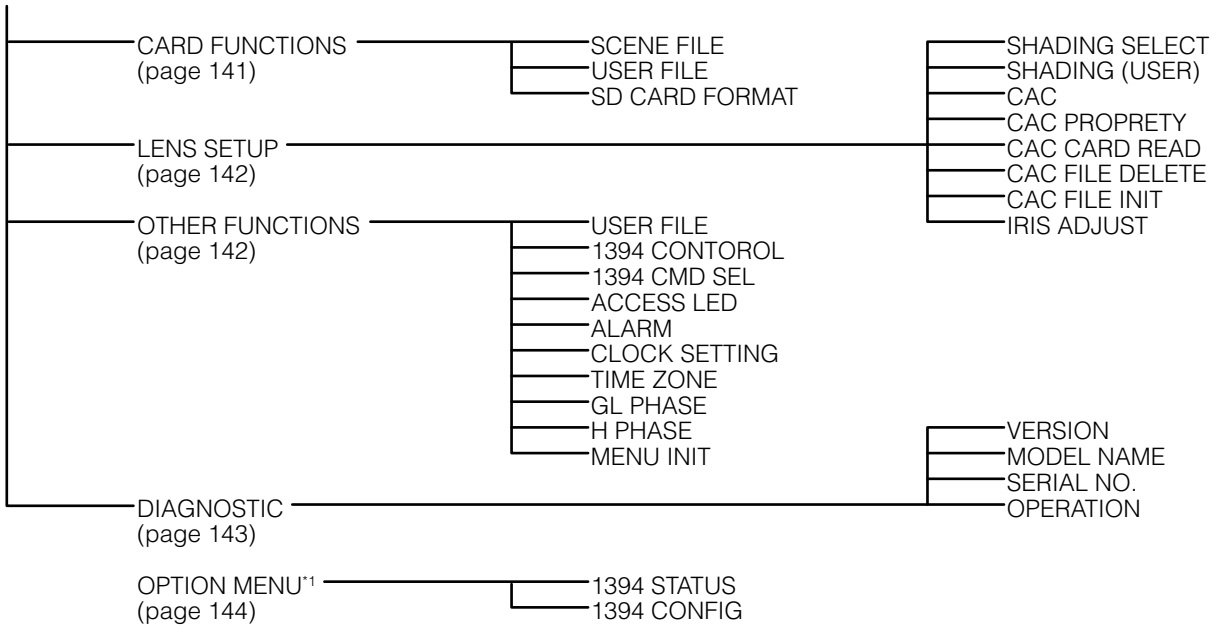
- This does not affect the other scene files.

Initializing user files and scene files simultaneously

You can return the user files and the six scene files to their factory defaults by selecting YES in the menu option MENU INIT in the OTHER FUNCTIONS screen.

Setup menu structure





*1 To open the OPTION MENU, hold down the DISP/MODE CHK button and press the MENU button.

Setup menu list

SCENE FILE screen

Item	Setting	Notes
LOAD/SAVE/INIT	Loads, saves and initializes settings of the scene file assigned to the current scene dial position (one F1 – F6 scene file). **LOAD:** Loads data stored in camera memory. **SAVE:** Saves current values in camera memory. **INITIAL:** Returns settings to their factory defaults.	• A change in scene files affects only the scene file at the current scene dial position.
VFR	Enables or disables variable frame rate (VFR) mode at 720P. **ON:** VFR operation **OFF:** VFR off	• Available only in 720P system mode. (This message does not appear in modes other than 720P.) • This setting cannot be made when REC SIGNAL is 1394.
FRAME RATE	Adjusts the frame rate and exposure time at 720P when VFR is on. (When SYSTEM MODE is set to 720-50P) 12, 15, 18, 20, 21, 22, 23, 24, 25, 26, 27, 28, 30, 32, 34, 37, 42, 45, 48, 50 FRAME (When SYSTEM MODE is set to 720-59.94P) 12, 15, 18, 20, 21, 22, 24, 25, 26, 27, 28, 30, 32, 34, 36, 40, 44, 48, 54, 60 FRAME	• Available only in 720P system mode and when VFR is set to ON. (This message does not appear in modes other than 720P.) • This setting cannot be made when REC SIGNAL is 1394. • A change to 24 fps may cause the screen to flicker momentarily.
(SYNCHRO SCAN)	Displays synchro scan shutter speeds to enable the operator to synchronize the camera to computer monitors. • This function only displays the shutter speeds. Use the SYNCHRO SCAN switch to set a shutter speed. • Set values (displayed values) are assigned to the current scene file and manipulated using the LOAD, SAVE and INIT functions. For details, refer to [Placing the Camera-recorder in SYNCHRO SCAN Mode] (page 55). **1/50.0**	• Displayed in blue when not set to synchro scan mode and when the SYNCHRO SCAN switch settings are not available. • When SYSTEM MODE is set to 1080-59.94i, 720-59.94i or 480-59.94i, performing the INITIAL option of the scene files will set the default value to 1/60.0.
DETAIL LEVEL	Adjusts the level of image outline correction (in horizontal and vertical directions). **–7 ... 0 *1 ... +7**	
V DETAIL LEVEL	Adjusts the level of correction in vertical direction. **–7 ... 0 *1 ... +7**	
DETAIL CORING	Adjusts the level of noise reduction of the detail signal. **–7 ... +5 *1 ... +7** • Adjust towards – for a clearer image. Noise increases slightly. • Adjust towards + for less noise.	
CHROMA LEVEL	Adjusts the chroma level. **–7 ... 0 *1 ... +7**	
CHROMA PHASE	Makes fine adjustments to the chroma phase. **–7 ... 0 *1 ... +7**	
COLOR TEMP Ach	Makes fine adjustments to the color temperature (after Ach white balance adjustment). **–7 ... 0 *1 ... +7**	
COLOR TEMP Bch	Makes fine adjustments to the color temperature (after Bch white balance adjustment). **–7 ... 0 *1 ... +7**	

*1 The factory default when the SCENE FILE dial is set to F1.

Item	Setting	Notes
MASTER PED	Adjusts the black master pedestal that serves as the video reference. **–100 ... <u>0</u> [*1] ... +100**	• Hold down the JOG dial button and turn it downwards or upwards and maintain this position to quickly change values. • When a remote controller (AJ-RC10G) is connected, use the M-PED control on the remote controller to adjust.
A. IRIS LEVEL	Sets the AUTO IRIS target value. **–10 ... <u>0</u> [*1] ... +10**	
DRS EFFECT	Sets the compression level in high-brightness areas of the DRS (dynamic range stretcher) function. This function compresses the video signal level to extend the dynamic range making it possible to correctly render highlight areas without overexposure and loss of detail that would otherwise occur. **1, 2, <u>3</u> [*1]** • Higher numbers mean a higher compression level of high-brightness areas and more noise in dark areas.	• Not available at 1080/25P (30P, 24P) mode.
GAMMA	Selects the gamma curve. **<u>HD NORM</u> [*1]:** Gamma setting for HD recording. **LOW:** Applies a gently rising gamma curve to low-brightness areas for a balanced look. **SD NORM:** Normal video setting inherited from the DVX100 series. **HIGH:** Applies a steep gamma curve to low brightness areas to expand the tonality of dark areas for video with greater brightness. Contrast softens as a result. **B.PRESS:** Produces sharper contrast than LOW. **CINE-LIKE D:** Applies a gamma curve to produce video with a cine-like feel. **CINE-LIKE V:** Applies a gamma curve to produce high-contrast video with a cine-like feel. • A lens aperture set lower than normal video level (approx. 1/2) is recommended when using cine-like gamma to enjoy the full benefit of the function.	• A change in settings during DRS operation will not change video quality.
KNEE	Sets the compression level (knee point) of the high brightness video signals received through the MOS sensor to avoid overexposure. **HIGH:** High setting (compression starts at approx. 100%) **MID:** Medium setting (compression starts at approx. 90%) **<u>LOW</u> [*1]:** Low setting (compression starts at approx. 80%)	• A change in settings during DRS operation will not change video quality.
MATRIX	Selects the MATRIX table to reproduce color during shooting. **<u>NORM1</u> [*1]:** Ensures proper color rendition when shooting out in the open or under halogen lighting. **NORM2:** Produces more vivid colors than NORM1. **FLUO:** Ensures proper color rendition when shooting indoors under fluorescent lighting. **CINE-LIKE:** Produces a tone similar to movie film. .	
SKIN TONE DTL	Turns the skin tone detail on or off. When on, reduces detail to hide any skin blemishes. **<u>ON</u>, OFF [*1]**	

*1 The factory default when the SCENE FILE dial is set to F1.

____ indicates the factory setting

Item	Setting	Notes
V DETAIL FREQ	Sets vertical detail. **THIN:** Produces fine detail. **MID:** Produces less detail and wider edging. **THICK:** Produces even less detail and the widest edging effect. • Progressive recording made at THIN or MID cause horizontal lines or oblique lines that are almost horizontal to flicker when viewed on a normal monitor TV (50i (60i): Interlace). THIN and MID settings will produce higher resolution video than THICK when shooting progressive footage that will later be edited.	
NAME EDIT	Edits the name of scene files selected using the SCENE FILE dial.	

SYSTEM SETUP screen

Item	Setting	Notes
SYSTEM MODE	Specifies the signal format used by this camera. **1080-59.94i, 1080-50i, 720-59.94P, 720-50P, 480-59.94i 576-50i** • When a setting is changed, the message "TURN POWER OFF" appears. Then turn the power off and turn it back on again.	• Not available in USB DEVICE mode.
REC SIGNAL	Selects the input signal in the DVCPRO format. **CAMERA:** Records the camera recording signal. **1394:** Records signals input to the DVCPRO/DV connector. • This function is always set to CAMERA when the power is turned on.	• Not available when the menu option REC FORMAT is set to AVC-Intra or DVCPRO HD during native recording.
REC FORMAT	Selects the recording codec as well as shooting and recording modes. (when SYSTEM MODE is set to 1080-59.94i) **AVC-I100/60i, AVC-I100/30PN,** **AVC-I100/24PN:** Uses the AVC-I 100 codec for recording. Shooting and recording at 60i, 30PN (native recording) and 24PN (native recording). **AVC-I 50/60i, AVC-I 50/30PN,** **AVC-I 50/24PN:** Uses the AVC-I 50 codec for recording. Shooting and recording at 60i, 30PN (native recording) and 24PN (native recording). **DVCPROHD/60i:** Uses the DVCPRO HD codec for recording. Use CAMERA MODE options to set shooting mode. Recording is locked to 60i. (When SYSTEM MODE is set to 1080-50i) **AVC-I100/50i, AVC-I100/25PN:** Uses the AVC-I 100 codec for recording. Shooting and recording at 50i, 25PN (native recording). **AVC-I50/50i, AVC-I50/25PN:** Uses the AVC-I 50 codec for recording. Shooting and recording at 50i, 25PN. **DVCPROHD/50i:** Uses the DVCPRO HD codec for recording. Use CAMERA MODE options to set shooting mode. Recording is locked to 50i. (Continued on the next page)	• Not available when 1080i or 720P is set in SYSTEM MODE and REC SIGNAL is 1394. • Not available in USB DEVICE mode.

Item	Setting	Notes
REC FORMAT	(Continued from the previous page) (when SYSTEM MODE is 720-59.94P) **AVC-I100/60P, AVC-I100/30PN, AVC-I100/24PN:** Uses the AVC-I 100 codec for recording. Shooting and recording at 60i, 30PN (native recording) and 24PN (native recording). **AVC-I 50/60P, AVC-I 50/30PN, AVC-I 50/24PN:** Uses the AVC-I 50 codec for recording. Shooting and recording at 60i, 30PN (native recording) and 24PN (native recording). **DVCPRO HD/60P, DVCPRO HD/30PN, DVCPRO HD/24PN:** Uses the DVCPRO HD codec for recording. Shooting and recording at 60P, 30PN (native recording) and 24PN (native recording). (When SYSTEM MODE is set to 720-50P) **AVC-I100/50P, AVC-I100/25PN:** Uses the AVC-I 100 codec for recording. Shooting and recording at 50i, 25PN (native recording). **AVC-I50/50P, AVC-I50/25PN:** Uses the AVC-I 50 codec for recording. Shooting and recording at 50i, 25PN (native recording). **DVCPROHD/50P, DVCPROHD/25PN** Uses the DVCPRO HD codec for recording. Shooting and recording at 50i, 25PN (native recording). (when SYSTEM MODE is 480-59.94i) **DVCPRO50/60i, DVCPRO/60i, DV/60i:** These use DVCPRO50, DVCPRO and DV codecs, respectively. Use CAMERA MODE options to set shooting mode. Recording is locked at 60i. (When SYSTEM MODE is set to 576-50i) **DVCPRO50/50i, DVCPRO/50i, DV/50i:** Uses the DVCPRO50, DVCPRO and DV codec for recording respectively. Use CAMERA MODE options to set shooting mode. Recording is locked at 50i.	• Not available when 1080i or 720P is set in SYSTEM MODE and REC SIGNAL is 1394. • Not available in USB DEVICE mode.
CAMERA MODE	Sets the shooting mode of the camera during DVCPRO HD codec at 1080-50i (1080-59.94i) or during 576-50i (480-59.94i). (When SYSTEM MODE is set to 1080-50i or 576-50i) **50i, 25P** (When SYSTEM MODE is set to 1080-59.94i or 480-59.94i) **60i, 30P, 24P, 24PA**	• Does not appear when SYSTEM MODE is set to 720-50P (720-59.94P). • Not available in the following conditions. - When the REC SIGNAL option is set to 1394. - When SYSTEM MODE is set to 1080-50i (1080-59.94i) and REC FORMAT is set to something other than DVCPROHD/50i (60i).
SCAN REVERSE	Cancels the image inversion that occurs with film lenses and anamorphic lenses. **ON, OFF**	
ASPECT CONV	Selects the aspect ratio for recording at 576i (480i). **SIDE CROP:** Crops the right and left edges of the image. **LETTER BOX:** Adds black bands at the top and bottom of the image. **SQUEEZE:** Compresses the image horizontally.	• Not available when SYSTEM MODE is set to 1080-50i (1080-59.94i) or 720-50P (720-59.94P).
SETUP	Selects the setup level for the 480i video signal. **0%:** Setup is switched to 0% for both VIDEO OUT output and recording. **7.5% A:** Setup is switched to 7.5% for VIDEO OUT output and 0% for recording.	• This item is not displayed when SYSTEM MODE is set to 1080-50i, 720-50P, 576-50i.

____ indicates the factory setting

Item	Setting	Notes
PC MODE SELECT	Sets camera operating mode when PC MODE is set to ON and an external device is connected via USB. **USB HOST:** Selects USB 2.0 for connecting an external hard disk drive. (For details, refer to page 146.) **USB DEVICE:** Makes it possible to connect the camera to a computer via USB 2.0 to enable use of a P2 card as mass storage. (For details, refer to page 145.)	• Not available when PC MODE is set to ON.
PC MODE	Operates the camera according to mode selected using PC MODE SELECT. **ON:** Operates in PC MODE. **OFF:** Terminates PC MODE and returns the camera to normal operation. • This function is always set to OFF when the power is turned on.	

SW MODE screen

Item	Setting	Notes
LOW GAIN	Sets the gain value assigned to the L position of the GAIN switch. **–3dB, 0dB, 3dB, 6dB, 9dB, 12dB**	
MID GAIN	Sets the gain value assigned to the M position of the GAIN switch. **–3dB, 0dB, 3dB, 6dB, 9dB, 12dB**	
HIGH GAIN	Sets the gain value assigned to the H position of the GAIN switch. **–3dB, 0dB, 3dB, 6dB, 9dB, 12dB**	
ATW	Allows you to assign the ATW (Auto Tracking White Balance) function to the WHITE BAL switch. (For details, refer to page 52.) **Bch:** Controls the ATW function when the WHITE BAL switch is set to B position. **OFF:** Does not assign the ATW function to the WHITE BAL switch.	• A USER button to which ATW has been assigned cannot be used to turn ATW off when the WHITE BAL switch is set to B position and this menu is set to Bch.
ATW TYPE	Selects type of ATW (Auto Tracking White Balance) function operation. **1:** Standard ATW operation **2:** Further restricts the color of the light source range that is tracked than setting 1. ATW operation reduces the risk of miscalculating light sources.	
W.BAL.PRESET	Sets the color temperature assigned to the PRST position of the WHITE BAL switch. **3.2K, 5.6K**	

Item	Setting	Notes
USER MAIN	Sets the function assigned to the USER MAIN button. **REC REVIEW, SPOTLIGHT, BACKLIGHT, ATW, ATWLOCK, GAIN: 24 dB, Y GET, DRS, TEXT MEMO, SLOT SEL, SHOT MARK, MAG A. LVL, PRE REC, PC MODE, WFM, FBC** For details, refer to [Assigning Functions to USER buttons] (page 57).	• When a remote controller (AJ-RC10G) is connected, the SPOTLIGHT and BACKLIGHT functions are not available.
USER1	Sets a function assigned to the USER1 button. The functions that can be assigned to this button are the same as for the USER MAIN button. **BACKLIGHT** (factory default setting) For details, refer to [Assigning Functions to USER buttons] (page 57).	
USER2	Sets a function assigned to the USER2 button. The functions that can be assigned to this button are the same as for the USER MAIN button. **TEXT MEMO** (factory default setting) For details, refer to [Assigning Functions to USER buttons] (page 57).	
RET SW	Sets the function assigned to the RET button on the lens. **REC REVIEW, TEXT MEMO, SHOT MARK**	
WFM	Selects the waveform displayed in the LCD monitor when the user button to which WFM has been assigned is pressed. **WAVE:** Displays a waveform. **VECTOR:** Vectorscope display **WAVE/VECT:** Each press of the button, switches the settings in the following order: OFF → WAVE (waveform) → VECTOR → OFF.	
AUTO KNEE SW	Selects the function of the OUTPUT/AUTO KNEE. **ON:** Setting AUTO KNEE to ON turns on the AUTO KNEE function. **OFF:** The AUTO KNEE function is not available even when AUTO KNEE is set to ON. **DRS:** Setting AUTO KNEE to ON turns on the DRS (Dynamic Range Stretcher) function. (For details, refer to page 9.)	• In the following conditions, selecting DRS results in the same operation mode as when ON is selected. - When set to 1080/25PN (30PN, 24PN) mode. - When set to 1080/50i (60i) mode with the 1/12.5 or 1/25 (1/15, 1/30) shutter speed.

RECORDING SETUP screen

Item	Setting	Notes
REC FUNCTION	Sets special recording modes. **NORMAL:** The special recording modes are not used. **INTERVAL:** Sets interval recording. **ONE SHOT:** Sets one-shot recording. **LOOP:** Sets loop recording. For details, refer to [Special Recording Modes] (page 39). • This function is always set to NORMAL when the power is turned on.	• Not available in the following conditions. - When REC SIGNAL is set to 1394 - When REC FORMAT is set to native recording. - When SYSTEM MODE is set to 1080-59.94i or 480-59.94i; and CAMERA MODE is set to 24P or 24PA.
ONE SHOT TIME	Sets the duration for one-shot recording. **1frm, 2frm, 4frm, 8frm, 16frm, 1s** For details, refer to [One-shot recording (ONE SHOT REC)] (page 40).	• Available only when REC FUNCTION is set to ONE SHOT.

____ indicates the factory setting

Item	Setting	Notes
INTERVAL TIME	Sets the time interval of interval recording. **2frm, 4frm, 8frm, 16frm, 1s, 2s, 5s, 10s, 30s, 1min, 5min, 10min** For details, refer to [Interval recording (INTERVAL REC)] (page 40).	• Available only when REC FUNCTION is set to INTERVAL.
START DELAY	This delays the start of interval and one-shot recording by about 1 second. **ON, OFF**	• Available only when REC FUNCTION is set to INTERVAL or ONE SHOT.
PREREC MODE	Sets PRE REC. **ON, OFF** For details, refer to [Pre-recording (PRE REC)] (page 39).	• Not available in the following conditions. - When REC SIGNAL is set to 1394 - When SYSTEM MODE is set to 720-50P (720-59.94P) and VFR is set to ON. - When REC FORMAT is set to native recording. - When SYSTEM MODE is set to 1080-59.94i or 480-59.94i; and CAMERA MODE is set to 24P or 24PA. - When REC FUNCTION is set to something other than NORMAL.
TC MODE	Sets count correction when using the internal time code generator. **DF:** Drop frame time code **NDF:** Non drop frame time code For details, refer to [Setting the Time Code] (page 65).	• This item is not displayed when SYSTEM MODE is set to 50 Hz. • Not available when operating at 24P, 24PA and 24PN is set to ON. Then NDF is used at all times.
UB MODE	Sets the data recorded in the camera user bits. **USER, TIME, DATE, EXT, TCG, FRM.RATE** For details, refer to [Setting user bits] (page 63).	

AUDIO SETUP screen

Item	Setting	Notes
FRONT VR CH1	Enables/disables Front Audio Level control of CH1 input. **FRONT:** Enables Front Audio Level control of microphone input to CH1. **W.L.:** Enables Front Audio Level control of audio from a wireless receiver input to CH1. **REAR:** Enables Front Audio Level control of rear input that is input to CH1. **ALL:** Enables Front Audio Level control when front, wireless, rear and other inputs are input to CH1. **OFF:** Disables Front Audio Level control of CH1.	• When the AUDIO SELECT CH1 switch is set to AUTO and auto adjustment mode is active, the Front Audio Level control is disabled regardless of these settings.
FRONT VR CH2	Enables/disables Front Audio Level control of CH2 input. Same setting as FRONT VR CH1. **OFF** (factory default setting)	• When the AUDIO SELECT CH2 switch is set to AUTO and auto adjustment mode is active, the Front Audio Level control is disabled regardless of these settings.

Item	Setting	Notes
MIC LOWCUT CH1*1	Sets the CH1 microphone low-cut filter. **FRONT:** Operates for the front microphone input. **W.L.:** Operates for wireless receiver input. **REAR:** Operates for the rear microphone input. **OFF:** Turns off the filter for all inputs.	
MIC LOWCUT CH2*1	Sets the CH2 microphone low-cut filter. Same setting as MIC LOWCUT CH1. **OFF** (factory default setting)	
MIC LOWCUT CH3*1	Sets the CH3 microphone low-cut filter. Same setting as MIC LOWCUT CH1. **OFF** (factory default setting)	
MIC LOWCUT CH4*1	Sets the CH4 microphone low-cut filter. Same setting as MIC LOWCUT CH1. **OFF** (factory default setting)	
LIMITER CH1	Sets the CH1 limiter. **ON, OFF**	• When the AUDIO SELECT CH1 switch is set to AUTO and auto adjustment mode is active, the limiter is disabled regardless of these settings.
LIMITER CH2	Sets the CH2 limiter. **ON, OFF**	• When the AUDIO SELECT CH2 switch is set to AUTO and auto adjustment mode is active, the limiter is disabled regardless of these settings.
AUTO LEVEL CH3	Selects the method for setting CH3 level. **ON:** Engages the auto adjustment mode. The limiter is not available. **OFF:** Locks the level. The limiter operates on all inputs except the line input of the rear.	
AUTO LEVEL CH4	Selects the method for setting CH4 level. Same setting as AUTO LEVEL CH3. **ON** (factory default setting)	
25M REC CH SEL	Selects the audio channels to be recorded in the DVCPRO and DV formats. **2CH:** Only recorded on CH1 and CH2. **4CH:** Records on all four channels.	• Not available in the following conditions. - When SYSTEM MODE is 1080-50i (1080-59.94i) or 720-50P (720-59.94P). - When SYSTEM MODE is set to 576-50i (480-59.94i) and REC FORMAT is set to the DVCPRO50 codec. - REC SIGNAL is set to 1394 (operation depends on 1394 input status).
TEST TONE	Selects the test signal. **NORMAL:** Outputs test tones to channels 1, 2, 3 and 4 when the OUTPUT/AUTO KNEE selector switch is set to BARS and the AUDIO IN switch CH1 is set to FRONT. **ALWAYS:** Outputs test tones to channels 1, 2, 3 and 4 at all times when the OUTPUT/AUTO KNEE selector switch is set to BARS. **CHSEL:** Outputs test tones to channels selected by setting the AUDIO IN switch CH1 or CH2 to FRONT and the OUTPUT/AUTO KNEE selector switch is set to BARS. (Test tones are not output to CH3 and CH4.) **OFF:** Does not output a test tone.	
F.MIC POWER	Turns on and off the phantom power supply for the front microphone. **ON, OFF**	

*1 The frequency characteristics for a microphone low-cut filter is 200 Hz – 10 kHz.

____ indicates the factory setting

Item	Setting	Notes
R.MIC POWER	Turns on and off the phantom power supply for the rear microphone. **ON:** Turns on the phantom power supply to the microphone when the rear LINE/MIC/+48V switch is set to +48V. **OFF:** Does not supply phantom power to the microphone even when the rear LINE/MIC/+48V switch is set to +48V.	
MONITOR SELECT	Switches the output signal to AUDIO OUT, earphones and speaker when the MONITOR SELECT switch is set to ST. **STEREO, MIX**	
F.MIC LEVEL	Selects the input level for the front microphone. **–40dB, –50dB, –60dB**	
R.MIC CH1 LEVEL	Selects the input level for the rear microphone connected to CH1. **–50dB, –60dB**	
R.MIC CH2 LEVEL	Selects the input level for the rear microphone connected to CH2. **–50dB, –60dB**	
HEADROOM	Sets the headroom (standard level). **18dB, 20dB**	
WIRELESS WARN	Sets whether a warning should be output when wireless receiver reception is poor. **ON, OFF**	
WIRELESS TYPE	Selects wireless receiver type. **SINGLE:** 1-channel receiver **DUAL:** 2-channel receiver • When DUAL is selected for a 1-channel wireless receiver, CH2 and CH4 will stay mute.	
1394 AUDIO OUT	Selects audio channel output to 1394 OUT in DVCPRO or DV mode. **CH1/CH2, CH3/CH4**	• Available only when SYSTEM MODE is set to 576-50i (480-59.94i) and REC FORMAT is set to DVCPRO or DV.

OUTPUT SEL screen

Item	Setting	Notes
SDI SELECT	Sets the signal format type output from the SDI OUT connector. **AUTO:** Depends on SYSTEM MODE setting. **1080i**[*1]**:** Outputs 1080-50i (1080-59.94i) also when SYSTEM MODE setting is 720-50P (720-59.94P). **576i (480i):** Output is locked to 576-50i (480-59.94i) regardless of SYSTEM MODE setting.	• Not available when SYSTEM MODE is set to 576-50i (480-59.94i). Then 576i (480i) is output at all times.
SDI METADATA	Sets metadata (UMID) superimposition onto SDI OUT. **ON:** Superimposes metadata. **OFF:** Does not superimpose metadata.	
SDI EDH	Sets EDH superimposition when SDI OUT is an SD signal (576i (480i)). **ON:** Superimposes EDH. **OFF:** Does not superimpose EDH.	
DOWNCON MODE	Sets downconverter output (VIDEO OUT and 576i (480i) SDI OUT) in HD mode (1080i, 720P). **SIDE CROP, LETTER BOX, SQUEEZE**	• Not available when SYSTEM MODE is set to 576-50i (480-59.94i).

*1 Use 1080i selected in a SYSTEM MODE setting of 720-50P (720-59.94P) for checking video.

Item	Setting	Notes
VIDEO OUT CHAR	Specifies whether or not characters are superimposed on VIDEO OUT signals. **ON:** Superimposes characters. **OFF:** Does not superimpose characters.	• This setting is disabled when RC10 (remote controller) is connected in which case RC10 settings have priority.
VIDEO OUT ZEBRA	Specifies whether or not zebra pattern is superimposed on VIDEO OUT signals. **ON:** Displays a zebra pattern also on images output via the VIDEO OUT connector. **OFF:** The zebra pattern is not displayed in video output from the VIDEO OUT connector.	
TC OUT	Sets the time code type output from the TC OUT connector. **TCG:** Outputs the time code generator value of the camera at all times. **TCG/TCR:** Outputs time code generator value during camera recording and outputs the played back time code during video playback.	
TC VIDEO SYNCRO	Sets the delay of time code output from the TC OUT connector. **TC IN:** Does not delay output of input to TC IN connector. **VIDEO OUT:** Outputs the time code in line with delay of video output from the VIDEO OUT connector.	

DISPLAY SETUP screen

Item	Setting	Notes
EVF PEAK LEVEL	Adjusts the peaking level of the viewfinder and the LCD monitor. **–7 ... 0 ... +7**	
EVF PEAK FREQ	Adjusts the peaking frequency of the viewfinder and the LCD monitor. **HIGH, LOW**	
EVF SETTING	Adjusts viewfinder brightness and contrast on a subscreen. (Subscreen) EVF BRIGHTNESS EVF CONTRAST	
EVF B.LIGHT	Adjusts viewfinder backlight brightness. **HIGH, NORMAL, LOW**	
EVF COLOR	Selects whether the viewfinder image will be displayed in color or monochrome. **ON:** Color display **OFF:** Monochrome display	
ZEBRA1 DETECT	Sets the level of the right-leaning zebra pattern 1. **50% ... 70% ... 109%**	
ZEBRA2 DETECT	Sets the level of the left-leaning zebra pattern 2. **50% ... 85% ... 109%**	
ZEBRA2	Selects ZEBRA2 type. (For details, refer to page 79.) **ON, SPOT, OFF**	
MARKER	Turns center marker displayed in the viewfinder and on the LCD monitor on and off. (For details, refer to page 78.) **ON, OFF**	

____ indicates the factory setting

Item	Setting	Notes
SAFETY ZONE	Sets the safety zone displayed in the viewfinder and on the LCD monitor. (For details, refer to page 78.) **90%, 4:3, 13:9, 14:9, OFF**	• The safety zone is not displayed when 4:3, 13:9 or 14:9 is selected when SYSTEM MODE is set to 576-50i (480-59.94i) and ASPECT CONV is set to SIDE CROP or LETTER BOX.
FOCUS BAR	The length of the focus bar indicates accuracy of focusing. **ON:** Displays the focus bar. **OFF:** Does not display the focus bar.	• This function is not interlocked with the FOCUS ASSIST button.
LCD SETTING	Makes it possible to set video color level, brightness and contrast displayed in the LCD monitor in a subscreen. (Subscreen) LCD COLOR LEVEL LCD BRIGHTNESS LCD CONTRAST	
SELF SHOOT	Sets the LCD screen display when taking self portraits. **NORMAL:** The LCD image is not inverted sideways. **MIRROR:** The LCD image is inverted sideways. • LCD monitor status displays do not appear when this function is set to MIRROR to shoot self portraits.	
LCD BACKLIGHT	Adjusts LCD monitor backlight brightness. **HIGH, NORMAL, LOW**	
SYNC SCAN DISP	Selects synchro scan shutter display. **sec:** Indicates shutter speed in fractions. **deg:** Provides a shutter angle indication.	• Brightness may change when settings are modified.
DATE/TIME	Sets the date and time display. **TIME:** Hours, minutes and second display **DATE:** Year, month and day display **TIME&DATE:** Hours, minutes, seconds and year, month and day display **OFF:** Not displayed	
LEVEL METER	Sets the Audio Level Meter display. **ON, OFF**	
ZOOM	Sets the lens zoom value display. **ON, OFF**	
CARD/BATT	Sets the remaining P2 card capacity and battery charge. **ON, OFF**	
P2CARD REMAIN	Determines how remaining P2 card capacity is displayed. **TOTAL:** Displays value for both cards. **ONE-CARD:** Indicates the remaining capacity of the card that is being recorded.	
OTHER DISPLAY	Sets display of other data. **PARTIAL:** Displays some of the data. **ALL:** Displays all data. **OFF:** Not displayed	
MENU BACK	Select whether to lower the transparency of the background to make menu text easier to read. **ON:** Lowers background transparency. (However, the transparency of LCD SETTING and EVF SETTING is not lowered.) **OFF:** Does not lower background transparency.	
REC COUNTER	Selects counter operation during recording. **TOTAL:** Provides a continuous count until reset by pressing the COUNTER RESET button. **CLIP:** Clears the count value at start of recording and counts time of recording.	

BATTERY SETUP screen

Item	Setting	Notes
EXT DC IN SEL	Selects external DC power supply type. **AC ADAPTER:** AC adapter **BATTERY:** Battery	
BATTERY SELECT	Sets the battery type. **PROPAC14, TRIMPAC14, HYTRON50, HYTRON140, DIONIC90, DIONIC160, NP-L7, ENDURA7, ENDURA10, ENDURA-D, PAG L95, BP-GL65/95, NiCd14, TYPE A, TYPE B**	
BATTERY MODE	Sets near end. **AUTO:** Automatically selects one of the battery types selected in BATTERY SELECT. **MANUAL:** Manually sets the near end voltage.	
PROPAC14 NEAR	Sets the near end voltage for PROPAC14. (Adjustable in 0.1 V units.) **11.0 V ... 13.5 V ... 15.0 V**	
TRIMPAC14 NEAR	Sets the near end voltage for PROPAC14. (Adjustable in 0.1 V units.) **11.0 V ... 13.4 V ... 15.0 V**	
HYTRON50 NEAR	Sets the near end voltage for HYTRON50. (Adjustable in 0.1 V units.) **11.0 V ... 13.4 V ... 15.0 V**	
HYTRON140 NEAR	Sets the near end voltage for HYTRON140. (Adjustable in 0.1 V units.) **11.0 V ... 13.1 V ... 15.0 V**	
DIONIC90 NEAR	Sets the near end voltage for DIONIC90. (Adjustable in 0.1 V units.) **11.0 V ... 13.7 V ... 15.0 V**	
DIONIC160 NEAR	Sets the near end voltage for DIONIC160. (Adjustable in 0.1 V units.) **11.0 V ... 13.3 V ... 15.0 V**	
NP-L7 NEAR	Sets the near end voltage for NP-L7. (Adjustable in 0.1 V units.) **11.0 V ... 13.6 V ... 15.0 V**	
ENDURA7 NEAR	Sets the near end voltage for ENDURA7. (Adjustable in 0.1 V units.) **11.0 V ... 13.4 V ... 15.0 V**	
ENDURA10 NEAR	Sets the near end voltage for ENDURA10. (Adjustable in 0.1 V units.) **11.0 V ... 13.4 V ... 15.0 V**	
ENDURA-D NEAR	Sets the near end voltage for ENDURA-D. (Adjustable in 0.1 V units.) **11.0 V ... 13.4 V ... 15.0 V**	
PAG L95 NEAR	Sets the near end voltage for PAG L95. (Adjustable in 0.1 V units.) **11.0 V ... 13.8 V ... 15.0 V**	
BP-GL65/95 NEAR	Sets the near end voltage for BP-GL65/95. (Adjustable in 0.1 V units.) **11.0 V ... 13.4 V ... 15.0 V**	
NiCd14 NEAR	Sets the near end voltage for NiCd14. (Adjustable in 0.1 V units.) **11.0 V ... 13.5 V ... 15.0 V**	
NiCd14 END	Sets the end voltage for NiCd14. (Adjustable in 0.1 V units.) **11.0 V ... 13.1 V ... 15.0 V**	
TYPE A FULL	Sets the full voltage for TYPE A. (Adjustable in 0.1 V units.) **12.0 V ... 15.7 V ... 17.0 V**	

____ indicates the factory setting

Item	Setting	Notes
TYPE A NEAR	Sets the near end voltage for TYPE A. (Adjustable in 0.1 V units.) **11.0 V ... <u>13.7 V</u> ... 15.0 V**	
TYPE A END	Sets the end voltage for TYPE A. (Adjustable in 0.1 V units.) **11.0 V ... <u>13.3 V</u> ... 15.0 V**	
TYPE B FULL	Sets the full voltage for TYPE B. (Adjustable in 0.1 V units.) **12.0 V ... <u>16.0 V</u> ... 17.0 V**	
TYPE B NEAR	Sets the near end voltage for TYPE B. (Adjustable in 0.1 V units.) **11.0 V ... <u>13.1 V</u> ... 15.0 V**	
TYPE B END	Sets the end voltage for TYPE B. (Adjustable in 0.1 V units.) **11.0 V ... <u>12.8 V</u> ... 15.0 V**	
NEAR END CANCEL	Sets to cancel battery near end warning. ON, OFF. **<u>ON</u>, OFF** • When set to ON, pressing the DISP/MODE CHK button stops the flashing of warning and tally lamps.	

CARD FUNCTIONS screen

Item	Setting	Notes
SCENE FILE	Reads/writes scene files from/onto the SD memory card. **FILE SELECT:** Selects scene files (1 to 4). **READ:** Reads the selected scene file (1 – 4) settings stored on the SD memory card. **WRITE:** Saves the current scene file (1 – 4) settings to the SD memory card. **TITLE RELOAD:** Reloads title list.	
USER FILE	Reads/writes user files (files other than SCENE FILES) from/onto the SD memory card. **FILE SELECT:** Selects user files (1 to 4). **READ:** Reads the user file (1 – 4) settings stored on the SD memory card. **WRITE:** Saves the current user file (1 – 4) settings to the SD memory card. **TITLE RELOAD:** Reloads title list.	
SD CARD FORMAT	Formats SD memory cards.	

• Setting data file operations may end in error during playback or when the menu option PC MODE is set to ON in the SYSTEM SETUP screen. Set the menu option PC MODE to OFF before making file operations.

LENS SETUP screen

Item	Setting	Notes
SHADING SELECT	Sets one of the following shading compensation parameters. **DEFAULT:** Standard lens setting **USER1:** User setting 1 **USER2:** User setting 2 **USER3:** User setting 3 **OFF:** Sets shading compensation to OFF.	
SHADING (USER)	Selects whether or not to set shading parameters to SHADING SELECT USER 1, 2 and 3.	Not available when SHADING SELECT is set to DEFAULT or OFF.
CAC	Determines whether or not to use the lens chromatic aberration compensation (CAC) function. **ON:** Uses CAC **OFF:** Does not use CAC.	
CAC PROPERTY	Displays currently used CAC file number and CAC file data loaded in the camera.	
CAC CARD READ	Loads CAC file data from the SD card.	
CAC FILE DELETE	Displays a list of CAC files loaded in the camera and delete selected files.	
CAC FILE INIT	Returns the CAC files loaded in the camera to their factory default settings.	
IRIS ADJUST	Forcibly sets the iris. **F2.8, F16**	

OTHER FUNCTIONS screen

Item	Setting	Notes
USER FILE	Saves user files to camera memory, loads them into camera memory or initializes them. (For details, refer to page 85.) **LOAD, SAVE, INITIAL** • This does not affect options in the SCENE FILE screen.	• Not available when PC MODE SELECT is set to USB DEVICE and PC MODE is set to ON.
1394 CONTROL	Selects the method the camera uses for controlling external devices connected to the DVCPRO/DV connector. (For details, refer to page 151.) **EXT:** Controls only the external device, but does not transfer data to the camera for recording. **BOTH:** Controls both the external device and the camera, and also records. **CHAIN:** When there is no more space left for recording in the camera, recording is automatically made to the external device. **OFF:** No control	• Not available in AVC-Intra mode and DVCPRO HD native mode. • Not available during interval, one-shot and loop recording.
1394 CMD SEL	Determines how recording is stopped when the camera controls an external device connected to the DVCPRO/DV connector. **REC_P:** Engages REC/PAUSE status. **STOP:** Stops recording.	• Not available in AVC-Intra mode and DVCPRO HD native mode. • Not available during interval, one-shot and loop recording.
ACCESS LED	Determines whether or not the P2 CARD ACCESS LED should light. **ON, OFF**	
ALARM	Sets the alarm sound output when an alarm occurs. **HIGH, LOW, OFF**	

____ indicates the factory setting

Item	Setting	Notes
CLOCK SETTING	Sets the internal calendar (date) For details, see [Setting Date and Time of Internal Clock] (page 26).	
TIME ZONE	Sets the time difference relative to Greenwich Mean Time (GMT). **–12:00 ... 0:00 ... +13:00** For details, see [Setting Date and Time of Internal Clock] (page 26).	• This setting cannot be initialized by performing the MENU INIT option and the INITIAL option in USER FILE.
GL PHASE	Selects the output signal whose phase is locked to the signal input to the GENLOCK IN connector in HD (1080i, 720P) mode. (For details, refer to page 69.) **HD SDI:** The HD SDI is locked to the genlock input. **COMPOSITE:** The down-converted composite signal (VIDEO OUT or SDI OUT 576i (480i) signal) is locked to the genlock input.	• Not available when SYSTEM MODE is set to 576-50i (480-59.94i).
H PHASE	Adjusts the horizontal phase when phase is locked to the signal input to the GENLOCK IN connector. **–512 ... 0 ... +511**	• Hold down the JOG dial button and turn it downwards or upwards and maintain this position to quickly change values.
MENU INIT	Restores all setting menu values including all scene files (F1 to F6) and the user file to their factory defaults.	• Not available when PC MODE SELECT is set to USB DEVICE and PC MODE is set to ON.

DIAGNOSTIC screen

Item	Setting	Notes
VERSION	Indicates the version of the firmware used in this camera. A subscreen provides details on which firmware versions are used. (Subscreen) CAM SOFT: Camera microprocessor software SYSCON SOFT: Software for system control microprocessor P2CS BL2-1: Boot program 1 for P2 control microprocessor P2CS BL2-2: Boot program 2 for P2 control microprocessor P2CS KR: P2 control microprocessor kernel P2CS AP: P2 control microprocessor application VUP: System software used for updating all camera firmware VUP FS: File system for updating the camera DM FPGA: Main FPGA configuration ROM	
MODEL NAME	Indicates the model name of this camera.	
SERIAL NO.	Indicates serial number of this camera.	
OPERATION	Indicates the time of the camera has been on.	

OPTION MENU screen

Open this menu by holding down the DISP/MODE CHK button and when shooting status appears press the front MENU button. Use this function to check connection status during nonlinear editing.

Item	Setting	Notes
1394 STATUS	Opens the subscreen that shows 1394 status. (Subscreen) FORMAT: Format of input or output signals RATE: Transfer rate of input or output signals 60/50: Signal system of input or output signals CH: Channel of input or output signals SPEED: Transfer rate of input or output signals STATUS: Status of signals output or input via the IEEE1394 digital interface VIDEO: Status of input or output video signals AUDIO: Status of input or output audio signals	
1394 CONFIG	Opens a menu for configuring 1394 functionality. **DFLT, 1-255** • Use DFLT for normal operation.	

Chapter 8 Connecting to External Devices

Functionality Provided by Connections to USB 2.0 Connector

Connecting to a computer in USB device mode

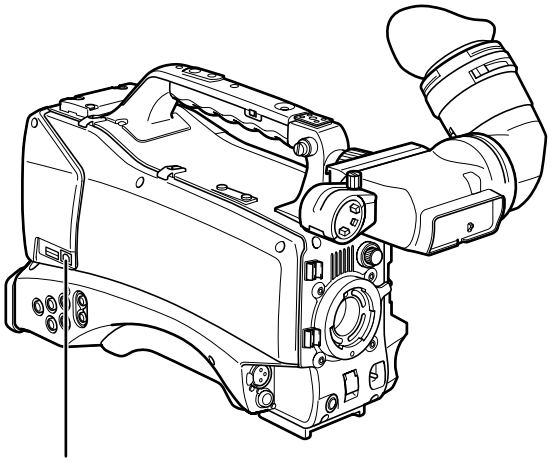
A USB 2.0 connection to a computer or other device allows you to use P2 cards in the camera as mass storage.

Procedures for making connections to a computer

1 Connect a USB cable to the USB 2.0 connector.

◆ **NOTE**

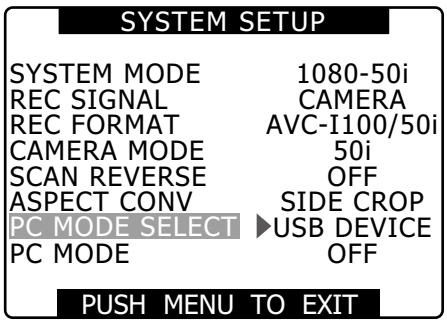
- **A USB 2.0 cable is not supplied with the AG-HPX301E. Use a commercially available USB cable (with shielding or other noise-reduction measures) that supports USB 2.0.**
- **The camera supports USB cable lengths up to 5 meters. However, we recommend use of a USB cable shorter than 3 meters.**



USB 2.0 Connector (DEVICE)

2 Set the menu option PC MODE SELECT in the SYSTEM SETUP screen to USB DEVICE and set PC MODE to ON.

For details on menu operation, refer to [Using the menus] (page 125).



◆ **NOTE**

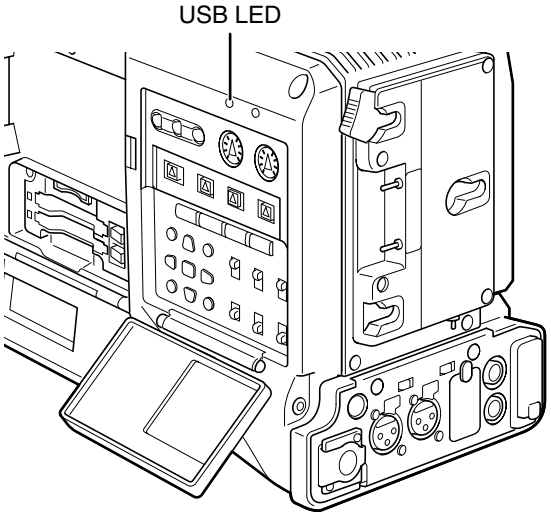
You can use the menu option USER MAIN/USER1/ USER2 in the SW MODE screen to assign PC MODE settings to a user button.
Note that the USER button functions are not available when the menu is open.

To make a USB connection, you must first install the P2 software on the supplied CD-ROM on the computer. Select the “AG-HPX300” driver. This USB driver supports only the Windows operating system. For details, refer to the installation manual.

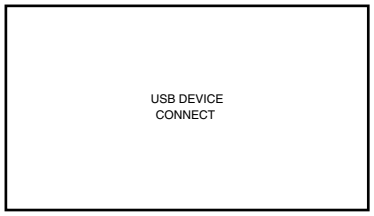
◆ **NOTE**

- **A USB driver must be installed on the computer.**
- **Use a computer that supports USB 2.0 since the camera supports only USB 2.0.**
- **Connect only one camera to a computer via USB.**
- **Do not remove P2 cards when the camera is connect to a computer via USB.**
- **In a USB connection, the P2 CARD ACCESS LED is on only when the card is accessed.**
- **In USB device operation, recording, playback and clip thumbnail operations are not available.**
- **When a USB device is running, the remaining capacity of P2 cards is not indicated. Audio is not output through the SDI OUT or DVCPRO/DV connector and the AUDIO level meters do not appear.**

- The USB lamp on the camera lights during USB connection and USB DEVICE CONNECT appears in the center of the viewfinder. If a normal connection cannot be established, the USB lamp blinks and DISCONNECT appears in the viewfinder.



(Viewfinder display)



3 Terminating USB mode

Use one of the following three methods.

- Set the camera POWER switch to OFF.
- Set the PC MODE option in the SYSTEM SETUP screen to OFF.
- Press the USER button to which PC MODE has been assigned.

USB host mode

This mode allows you to connect the camera to a hard disk drive that supports USB 2.0 to save card data, view thumbnails of the stored clips and write data back to P2 cards.

Switching to USB Host Mode

1 Set the menu option PC MODE SELECT in the SYSTEM SETUP screen to USB HOST and set PC MODE to ON.

- This engages the USB host mode.
- The USB LED on the camera lights in USB host mode and USB HOST CONNECT appears in the center of the viewfinder. When a normal connection cannot be established with the hard disk, the USB LED flashes and DISCONNECT appears in the viewfinder.
- When PC MODE is assigned to a user button, press that user button to switch between USB host mode and normal mode. However, a user button cannot be used for switching in the thumbnail mode.
  For details, refer to [Assigning functions to USER Buttons] (page 57).

2 Press the THUMBNAIL button.

- The thumbnail screen opens.
- Make sure that USB HOST appears at the bottom right of the screen.
- When the camera is connected to a hard disk drive, the HDD icon appears at the top right of the screen. If the icon lights red this indicates that data cannot be copied to or from the hard disk. Check hard disk drive type.
  For details on hard disk drives, refer to [Thumbnail Screen] (page 107).



◆ NOTE

The USB host mode allows playback of P2 cards but not recording of camera video or external input. And clips on the hard disk must be written back to a P2 card before they can be played back.

For details, refer to [Writing back data to P2 cards] (page 149).

3 Terminating USB host mode.

Use one of the following three methods.

- Set the camera POWER switch to OFF.
- Close the thumbnail screen and set the menu option PC mode in the SYSTEM SETUP screen to OFF.
- Press the USER button to which PC MODE has been assigned *1.

*1 In thumbnail mode, pressing a user button will not terminate USB host mode.

Using USB host mode

Supported hard disks

- A hard disk drive that supports the USB 2.0 interface
- P2 STORE (the optional AJ-PCS060G hard drive)

◆ NOTE

- **This camera supports USB bus power (5 V, 0.5 A) but some hard disks may not be able to use USB bus power. Such hard disk drives should be provided with a separate power supply.**
- **Do not connect a hard disk to hubs or other connections that involve multiple units even if it is not powered on. Do not connect other devices to the hard disk drive via a hub or other device.**
- **This unit does not support hard disk drives that are 2 TB or larger.**

Viewing hard disk drive data

Use the following procedures to view data on a hard disk drive connected via USB.

1 Switch to USB host mode.

For details, refer to [Switching to USB Host Mode] (page 146).

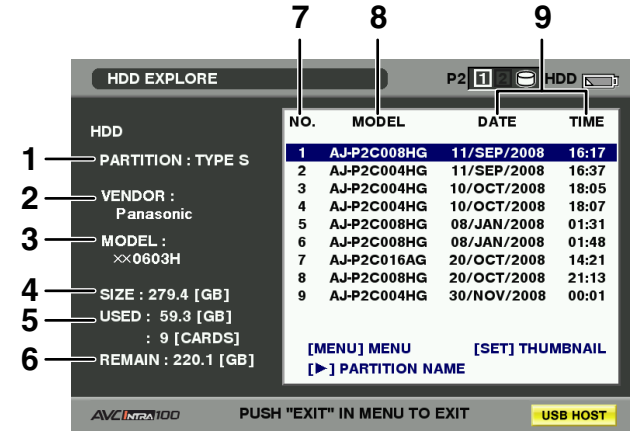
2 Connect a hard disk drive via USB.

3 Press the THUMBNAIL button. Open the thumbnail screen.

4 Press the THUMBNAIL button and select HDD → EXPLORE in the thumbnail menu.

- This opens a screen that shows hard disk drive data.

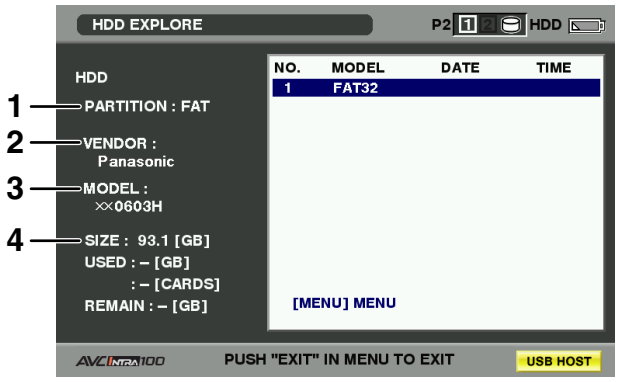
TYPE S or P2 STORE



Press the SET button. ↓ ↑ Press the EXIT button.



FAT formatted hard disk



1 PARTITION

Use this function to view hard disk drive type.
Operations differ depending on hard disk drive type.

Hard disk drive type	Features	Supported functions
TYPE S	A special format that permits high-speed loading and write back of data in card units. This is the format used by the camera.	This format allows thumbnail display, loading and write back of data in card units, and write back of data and formatting in clip units.
P2STORE	This is the P2 STORE (AJ-PCS060G) hard disk drive. Cannot be used for writing data.	This format displays thumbnails, write back data in card units and write back data in clip units.
FAT	The basic primary partition on a PC is FAT 16 or FAT 32. The root directory of such a partition must contain a CONTENTS directory.	Display thumbnails, write back video data by the clip and formatting * Handled as a “TYPE S” hard disk after formatting.
OTHER	Hard disk other than those above * This refers to file systems where root does not contain a directory called “CONTENTS” or a NTFS file system other than FAT16 or FAT32.	Format * Handled as a “TYPE S” hard disk after formatting.

2 VENDOR

Indicates hard disk drive vendor.

3 MODEL

Indicates hard disk drive model.

4 SIZE

Indicates the total capacity of the hard disk drive.

5 USED

Indicates the size of used space on the hard disk drive (units: GB) and used P2 card area (units: cards).

6 REMAIN

Indicates remaining capacity (units: GB) on the hard disk drive.

7 Partition number

Indicates the number of partitions (in units of P2 cards) on the hard disk drive.

◆ NOTE

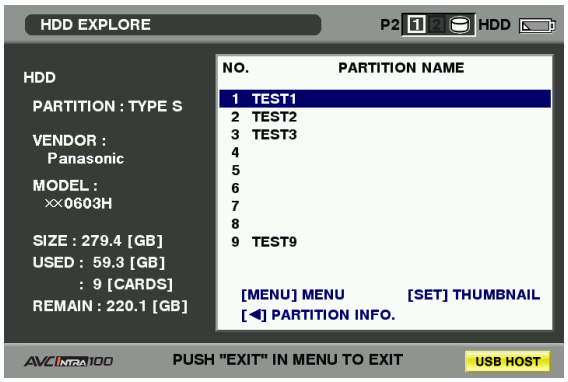
The screen can show up to 10 partitions. When there are 11 or more partitions, use the cursor button (▽) to move down to display the remaining partitions.

8 MODEL

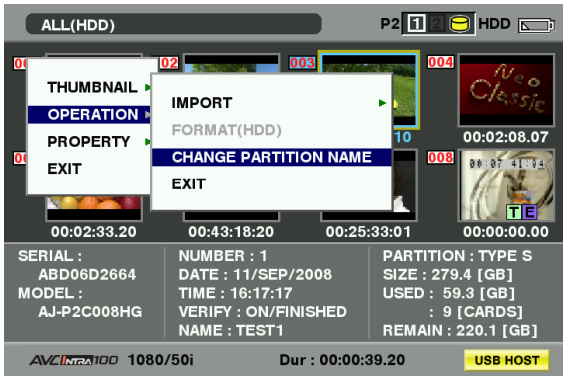
Indicates the model of P2 card that originally recorded the data in the partition.

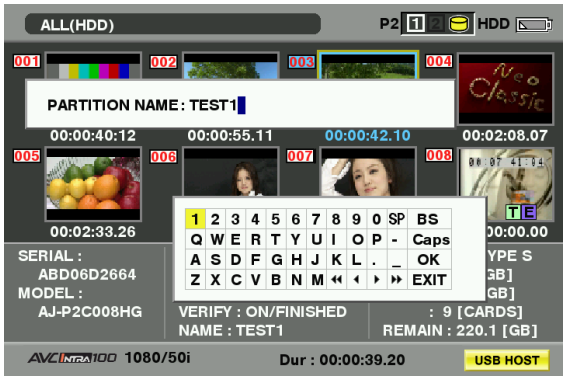
◆ NOTE

Press the cursor button (▷) to switch to PARTITION NAME. Use the cursor button (◁) to return to the previous model.



When hard disk drive thumbnails are displayed, select CHANGE PARTITION NAME in the OPERATION menu to enter the PARTITION NAME on the software keyboard. (up to 20 characters)





9 DATE/TIME

Indicates the date and time data was recorded on the partition.

10 SERIAL

Indicates the serial number of P2 card that originally recorded the data in the partition.

11 VERIFY

Indicates verify settings and results when data was recorded to a partition.

ON:FINISHED:

Runned verify and verify results were matched.

ON:FAILED:

Runned verify but verify results could not be matched.

OFF:

Did not run verify.

– – –:

No verify information available.

◆ NOTE

- **Hard disk drives formatted using FAT can handle up to 1000 clips. Any clips beyond that limit cannot be opened.**
- **Only the first partition of a hard disk drive formatted using FAT can display information.**
- **An invalid partition on P2 STORE (AJ-PCS060G) is indicated in gray.**

12 NAME

Indicates the PARTITION NAME.

Formatting Hard Disks

1 Switch to the USB host mode.

For details, refer to [Switching to USB Host Mode] (page 146).

2 Connect a hard disk drive via USB.

3 Press the THUMBNAIL button to open the thumbnail screen.

4 Press the THUMBNAIL button and select HDD → EXPLORE in the thumbnail menu.

- This opens a screen that shows hard disk drive data.

5 Select OPERATION → FORMAT (HDD) in the menu and use a cursor button and the SET button to select YES.

- Select YES in the confirmation message that appears again to start hard disk drive formatting.
- Handled as a "TYPE S" hard disk drive after formatting.

◆ **NOTE**

All data on a hard disk drive is deleted when the disk is formatted. It is not possible to select part of a partition to delete.

Writing to hard disk drive

1 Switch to the USB host mode.

For details, refer to [Switching to USB Host Mode] (page 146).

2 Connect a hard disk drive via USB.

If the hard disk drive has not been formatted by the camera, format it according to the instructions provided in [Formatting Hard Disks] (page 148).

3 Insert a P2 card.

4 Press the THUMBNAIL button to open the thumbnail screen.

5 Press the THUMBNAIL button and select HDD → EXPORT from the thumbnail menu and specify the slot of the P2 card with the data you want to write to the hard disk drive.

6 Select YES.

- This starts the write process.
- A progress bar appears during the write process. To interrupt writing, press the SET button. Selecting YES in the cancel confirmation that appears will stop the write process.
- COPY COMPLETED! announces the end of the write process.

◆ **NOTE**

- **To turn off the verify phase in a write operation, select HDD → SETUP in the thumbnail menu and set VERIFY to OFF. This speeds up the write time but does not verify the written data.**
- **Selecting ALL SLOT writes the data on all inserted P2 cards inserted in the camera to the hard disk drive.**

◆ **NOTE**

- **A TYPE S hard disk drive can write data in card units. Up to 23 P2 cards can be saved to a hard disk drive. The P2 card data recorded on a hard disk drive are recognized as separate drives.**
- **To write P2 cards with bad clips, it is a good idea to repair these clips before writing them to a hard disk drive.**
- **Ending a recording during the verify phase will end writing of data from the P2 card to the hard disk drive.**

Writing back data to P2 cards

This allows you to select a clip from the hard disk drive and write it back to a P2 card.

1 Switch to the USB host mode.

For details, refer to [Switching to USB Host Mode] (page 146).

2 Connect a hard disk drive via USB.

3 Insert the P2 card to which data will be written back to.

4 Press the THUMBNAIL button, select HDD → EXPLORE from the thumbnail menu, move to the partition with the data that will be read and press the SET button.

5 Select the clip to be written to the P2 card from the thumbnail on the hard disk drive.

6 Press the THUMBNAIL button, select OPERATION → IMPORT → SELECTED CLIPS from the thumbnail menu and select the slot of the P2 card to write the data to.

7 Select YES.

- This starts the data write to the P2 card.
- When the write process ends, "COPY COMPLETED!" appears.

◆ **NOTE**

- **When clips are selected for writing, verify is not performed.**

A TYPE S and P2 STORE hard disk drive allows you to write back data in card units.
Format the P2 card to prepare for write back.

1 Switch to the USB host mode.

For details, refer to [Switching to USB Host Mode] (page 146).

2 Connect a hard disk drive via USB.

3 Insert the P2 card to which data will be written back to.

4 Press the THUMBNAIL button, select HDD → EXPLORE from the thumbnail menu, move to the partition with the data that will be written and press the SET button.

5 Select OPERATION → IMPORT → ALL from the thumbnail menu and select a slot with an empty P2 card for writing to.

6 Select YES.

- This starts the write process to the card.

- COPY COMPLETED! announces the end of the write back process.

◆ **NOTE**

- **It is not possible to import data by the partition between P2 cards with different model numbers. Import data in clip units from cards with a different model number.**
- **To turn off the verify phase in a write back operation, select HDD → SETUP in the thumbnail menu and set VERIFY to OFF. This speeds up the write back time but does not verify the written data.**
- **When a clip is written back to a P2 card it was not originally on may make that clip an incomplete clip. Should this happen, reconnect it.**

Refer to [Reconnection of Incomplete Clips] (page 114).

Hard disk drive precautions

- Use hard disk drives (including P2 STORE (AJ-PCS060G)) according to the following conditions.
  - Operate hard disk drives within their operating specifications (temperature, etc.).
  - Do not use hard disk drives in locations that are unstable or exposed to vibration.
- Some hard disk drives may not operate normally.
- SATA (serial ATA) or PATA (parallel ATA) interface hard disk drives connected using a USB conversion cable may not be recognized.
- Use hard disk drives with plenty of capacity for copying data.
- During formatting and copying, do not disconnect cables or remove a P2 card that is involved in these activities and do not power off this camera and the hard disk drive, as the camera and hard disk drive will otherwise have to be rebooted.
- A hard disk drive is a precision instrument whose read and write functions may fail in some operating environments.
- Please note that Panasonic accepts no liability whatsoever for data loss or other losses either direct or indirect arising from hard disk damage or other defects.
- When data from this camera is copied to a hard disk and is edited on another computer, the data may no longer work in this unit and the hard disk data may become corrupted.
- Use of the drive mount converter distributed by the below URL allows you to mount specific folders when a hard disk drive is connected.

https://eww.pavc.panasonic.co.jp/pro-av/

Connections to the DVCPRO/DV Connector

Recording signals input to the DVCPRO/DV connector

1 Connect a 1394 cable (DV cable).

For details, see [Precautions in 1394 Connections] (page 152).

- Make sure that the signal format of the camera and the connected device is the same.

2 To route inputs via the IEEE1394 interface, set the menu option REC SIGNAL in the SYSTEM SETUP screen to 1394.

- To use HD (1080i, 720P) set the menu option REC FORMAT in the SYSTEM SETUP screen to DVCPRO HD/50i (DVCPRO HD/60i) or DVCPRO HD/50P (DVCPRO HD/60P).
  The AVC-Intra format and DVCPRO HD native recording do not allow input via the IEEE1394 interface.

◆ **NOTE**

- **Signals that have the same format as that set in the menu options SYSTEM MODE and REC FORMAT in the SYSTEM SETUP screen should be input to the IEEE1394 interface. A signal in a different format will not be correctly recorded on a P2 card. Video and audio recording and EE type video and audio of signal inputs other than 1x speed playback signals may not work.**
  For details, see [Warning and Error Display for Thumbnail Operation and USB HOST MODE] (page 159).
- **Audio signal inputs are input signals from the DVCPRO/DV connector.**
- **32 kHz/4CH (12 bit) audio signals input via the IEEE1394 interface are recorded as 48 kHz/4CH (16 bit) on a P2 card.**
- **It is not possible to use the GENLOCK IN connector to synchronize to an external reference signal.**
- **Signals output from the VIDEO OUT or AUDIO OUT connectors differ from actual input signals. Use such signals for monitoring.**
- **The following functions do not operate.**
  - **Pre-recording function**
  - **Loop recording function**
  - **Interval recording and one-shot recording function**

Time Code and User Bits

- When input from the IEEE1394 interface is selected, the time code or user bits input to the TC IN connector cannot be recorded on a P2 card.
- When input from the IEEE1394 interface is selected, time code output from the TC OUT connector is not synchronized to the video signal output from the VIDEO OUT connector.

Subcode area time codes and user bits

- When input from the IEEE1394 interface is selected and the TCG switch is set to F-RUN, the time code of the subcode area input from the DVCPRO/DV connector can be recorded on the P2 card.
- To record user bits input from the DVCPRO/DV connector on a P2 card, set the menu option UB MODE in RECORDING SETUP to EXT.

VAUX area time codes and user bits

When input from the IEEE1394 interface is selected, time code and user bits of the VAUX area input from the DVCPRO/DV connector is recorded on a P2 card regardless of camera menu settings and switch positions.

Recording UMID (Unique Material Identifier) data

When input from the IEEE1394 interface is selected, UMID data input via the DVCPRO/DV connector is recorded on a P2 card. When no UMID data is available, the camera generates and records such data.
UMID data is not recorded when the camera is operating in the DV mode.

Control of external devices through 1394 connection

Connecting an external device for backup recording to the DVCPRO/DV connector allows the operator to control start and stop recording from the camera.

1 Connect a 1394 cable (DV cable).

For details, see [Precautions in 1394 Connections] (this page).

- Set 1394 CONTROL in the setting menu OTHER FUNCTIONS screen to BOTH.

2 Use the setting menu 1394 CMD SEL (OTHER FUNCTIONS) to select the command for terminating recording that external devices receive.

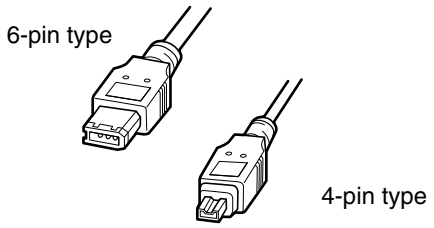
For details on menu operation, refer to [Using the menus] (page 125).

◆ **NOTE**

- **When the camera is set to REC RUN to perform backup recording on a connected external device, the advance of time code from the DVCPRO/DV connector will stop when all P2 cards have been fully recorded regardless of whether backup recording continues.**
- **It may not be possible for an external device to back up recording when quick transitions are made between recording and stopping.**
- **When the AVC-Intra format or DVCPRO HD native recording format is selected, control of an external device via a 1394 connection is not possible.**
- **Interval recording, one-shot recording and loop recording do not allow control of an external device via 1394.**

Precautions in 1394 Connections

- The camera does not supply power via the cable.
- Observe the following in connections using a 1394 cable.
  - Connect this unit to only one other device.
  - Do not expose the DVCPRO/DV connector to excessive force when connecting a 1394 cable to avoid damaging the connector.
  - If an error (1394 INITIAL ERROR) should occur when making a connection, reinsert the 1394 cable or turn the camera off and then turn it back on again.
  - Make sure that the camera and all connected devices are connected to ground (or connected to a common ground). If the equipment cannot be connected to ground, turn off all connected devices before connecting or disconnecting an IEEE1394 cable.
  - When connecting the unit to a device with a 4-pin connector, connect the cable to the 6-pin connector on the camera first.
  - Be sure to properly connect the 1394 cable to the DVCPRO/DV connector on a computer with a 6-pin connector. Note that inserting the plug the wrong way round may damage the connector.



- AV signals may be disrupted when connected devices are turned on and off or when the interface cable is connected or disconnected.
- It may take the system a few seconds to stabilize after switching input signals or changing modes. Start recording after the system has stabilized.
- The AUDIO LEVEL control does not work in recordings that involve IEEE1394 interface input or output signals.
- Observe the following precautions when controlling a P2 memory card camera-recorder using PC application software (editing software).
  - Recording cannot be inserted to a portion within a clip. It can only be appended to the end of the newest clip.
  - Do not open the thumbnail screen during application software operation as this may prevent normal software operation.
- Unprocessed video and audio signals are output via the IEEE1394 interface during special playback. When monitored on another device, these video and audio signals may sound different than when played back on this unit.
- A DV or DVCPRO output format makes it possible to select audio channel CH1/CH2 or CH3/CH4 output from the IEEE1394 interface in the menu option 1394 AUDIO OUT in the AUDIO SETUP screen.

Chapter 9 Maintenance and Inspections

Inspections Before Shooting

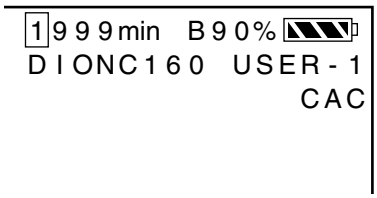
Make sure you check that the system is operating normally before embarking on a shoot. We recommend using a colour video monitor to check the image.

Preparing for Inspections

1 Mount a charged battery.

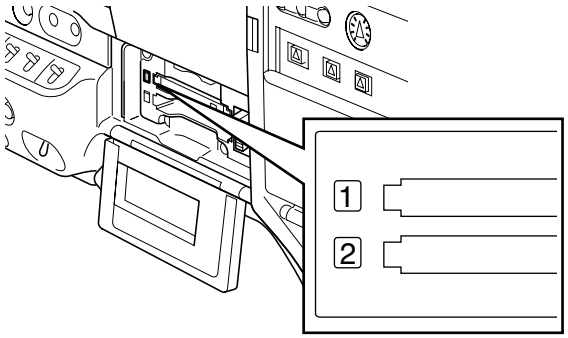
2 Turn the POWER switch to ON to check the battery remaining level in the viewfinder.

- When battery capacity is low, replace it with a fully charged battery.



3 Insert a P2 card in the card slot and close the slot cover.

- Confirm that the P2 CARD ACCESS LED for the inserted card slot lights up in orange. When P2 cards are installed in both card slots, the P2 CARD ACCESS LED for the first inserted card (that was first accessed) will light orange while the P2 CARD ACCESS LED for a subsequently inserted card will light green.
- If the access LED for the P2 card slot in which a P2 card is inserted keeps blinking in green, or if there is no display, recording is not possible on that particular P2 card.



Inspecting the Camera Unit

1 Set the zoom to electric zoom mode and check the zoom operation.

- Check that the image changes to telephoto and wide angle.

2 Set the zoom to manual zoom mode and check the zoom operation.

- Turn the manual zoom lever to check that the image changes to telephoto and wide angle.

3 Set the iris to automatic adjustment mode and aim the lens at objects with different degrees of brightness, to check that the automatic iris adjustment operates normally.

4 Set the iris to manual adjustment mode and turn the iris ring, to check the manual iris adjustment.

5 Return the iris to automatic adjustment mode and change the GAIN switch setting to L, M, and H, to check the following items:

- The iris is adjusted for objects with the same brightness according to the switch setting.
- The gain value displayed on the viewfinder screen changes according to the switch setting.

6 When a lens with an extender is mounted, set the extender to the operating position to check that the extender operates properly.

Inspecting the Memory Recording Functions

Make sure you successively carry out the inspections from [Inspecting the P2 Card Recording] to [Inspecting the Earphone and Speaker].

Inspecting the P2 Card Recording

1 Check on the display inside the viewfinder that the remaining P2 card recording capacity is sufficient.

For details, refer to [Screen displays] (page 71).

2 Press the camera's REC button to check the following items:

- The P2 access LED blinks in orange.
- The REC indication in the viewfinder lights.
- System warnings do not appear inside the viewfinder.

3 Press the camera's REC button again.

- Check that the P2 access LED lights orange and that REC indication in the viewfinder clears.

4 Using the REC button on the handle, repeat Steps 2 to 3 to check the same operation.

- Check the VTR button on the lens in the same way.

5 Press the THUMBNAIL button to switch the thumbnail screen to play back currently recorded clip from thumbnail.

- Check that playback is operating normally.

6 Use the USER button to which the SLOT SEL function has been assigned to select P2 cards for recording when more than one P2 card is inserted in the card slots.

- Repeat the operations in Steps 2 to 3 and 5 to check that recording and playback operate properly.

Inspecting the Audio Level Automatic Adjustment

1 Set the AUDIO SELECT CH1 and CH2 switches to [AUTO].

2 Set the AUDIO IN switch to [FRONT].

3 Aim the microphone connected to the MIC IN jack at an appropriate sound source. Then, check that the level displays for both CH1 and CH2 change according to the sound level.

Inspecting the Audio Level Manual Adjustment

1 Set the AUDIO IN switch to [FRONT].

2 Set the AUDIO SELECT CH1 and CH2 switches to [MAN].

3 Turn the AUDIO LEVEL CH1 and CH2 controls.

- Check that the level display increases when the controls are turned to the right.

Inspecting the Earphone and Speaker

1 Turn the MONITOR control to check that the speaker volume changes.

2 Connect an earphone to the PHONES jack.

- Check that the speaker is turned off and the microphone sound can be heard from the earphone.

3 Turn the MONITOR control to check that the earphone volume changes.

Inspection for Using an External Microphone

1 Connect an external microphone to the REAR 1 and REAR 2 connectors.

2 Set the AUDIO IN switch to [REAR].

3 Set the LINE/MIC/+48V selector switches on the rear panel to [MIC] or [+48V], depending on the power supply type of the external microphone.

- **MIC:** For a microphone with internal power supply.
- **+48V:** For a microphone with external power supply.

4 Aim the microphone at the sound source and check that the sound level indication in the LCD or viewfinder varies with changes in sound intensity.

- The channels can also be checked separately by connecting a single microphone to each channel.

Inspection of the clock, time code, and user bits

1 Set the user bits as required.

Please refer to [Setting user bits] (page 63) for the setting procedures.

2 Set the time code.

Please refer to [Setting the Time Code] (page 65) for the setting procedures.

3 Set the TCG switch to R-RUN.

- Press the COUNTER button to display the time code on the LCD monitor or in the viewfinder.

4 Press the REC button.

- Check that the counter display number changes as recording progresses.

5 Press the REC button again.

- Check that recording stops and the counter display number stops changing.

6 Set the TCG switch to F-RUN.

- Check that the counter display number changes regardless of recording status.

7 Hold down the DISP/MODE CHK button to check the date and time on the LCD monitor or in the viewfinder.

- Adjust the date and time setting if the DATE, TIME and time zone is not correctly displayed.

For details, see [Setting Date and Time of Internal Clock] (page 26).

◆ **NOTE**

Note that date and time data set for DATE, TIME, and time zone is recorded in clips, and affects the playback sequence, etc. at the time of thumbnail manipulations.

Maintenance

Eyepiece Care

■ When the outer lens is soiled

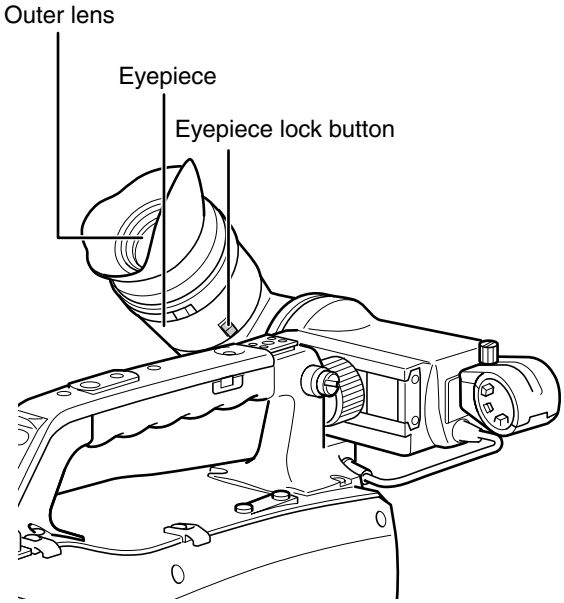
Remove surface dust using a soft brush or blower brush before cleaning with a commercially available lens cleaner (or lens cleaning paper).

■ When dust adheres to internal lenses or the interior of the eyepiece

Detach the eyepiece to remove the dust.
Use a soft brush or blower brush to remove surface dust.

◆ NOTE

Do not use thinner or other mineral solvents to remove dust or soiling.



Detaching the eyepiece

Slide the eyepiece lock button and turn the eyepiece clockwise.

Mounting the eyepiece

Line up the projection on the eyepiece lock button with the mark on the viewfinder and slide in the eyepiece. Turn the eyepiece counterclockwise until the lock knob clicks into place.

◆ NOTE

When outdoors, never carry or set up the camera with the eyepiece facing up to prevent sunlight, which could damage the camera, from entering.

Cleaning Inside the Viewfinder

Detach the eyepiece to remove dust from the LCD screen inside the viewfinder.
For details, refer to [Detaching the eyepiece] (this page).
Use a soft brush or blower brush to remove dust from the LCD screen.

◆ NOTE

Do not use thinner or other mineral solvents to remove dust or soiling.

Charging the internal battery

The internal battery preserves the date and time settings. If the camera is left unused for half a year or longer, the internal battery may become depleted and the (battery icon) may appear in the viewfinder and on the LCD monitor. Should this happen, connect an external DC power supply or battery and let the power stay on for about four hours to fully charge the internal battery. Then reset the time and date.
Replace the internal battery if appears after charging. Consult your distributor.

Warning System

Warning Description Tables

If a problem is detected immediately after the power is turned on, or during operation, this will be indicated by the WARNING lamp, lamps inside the viewfinder and a warning tone.

Priority	Warning type	LCD or viewfinder indication	Tally lamp	Warning lamp	Alarm tone*6	Warning description and recording/playback operation	Countermeasures
1	System error	SYSTEM ERROR Cause indication *1 Red blinking	Blinks 4 times per second	Blinks 4 times per second	Continuous tone	P2 microprocessor or control failure. Operation stops.	Check the cause indication *1 and consult your distributor.
2	Incorrect P2 card removal	TURN POWER OFF Blinks red	Blinks 4 times per second	Blinks 4 times per second	Continuous tone	A P2 card was removed during access and card data was corrupted. Both access LEDs light orange.	Turn off the power. Repair the P2 card if the clips on the card are corrupted.
3	The battery is exhauseted	LOW BATTERY Red blinking, and the battery level bar blinks with the empty status. (This indication appears also when MENU indications have been turned OFF.)	Blinks 1 time per second	Lights	Continuous tone	The battery is exhausted. Recording and playback stop. The camera stops automatically when the voltage drops.	Replace the battery.
4	P2 card fully recorded	P2 FULL Blinks red (appears only for 3 seconds in MCR mode.)	Blinks 4 times per second after completion of recording.	Lights after completing recording	Continuous tone after completing recording	No more space on P2 cards left for recording.Stop recording.*3	Delete clips that are no longer needed or insert a new card.
5	Recording error	REC WARNING Cause indication *2 Blinks red	Blinks 4 times per second	Blinks 4 times per second	Intermittent tone 4 times per second	A recording error has occurred. The error may terminate recording or let it continue. *4	Turn the power off and then back on again and check recording and playback. Replace any P2 card that does not enable normal recording.
6	Irregular reference signal	TEMPORARY PAUSE IRREGULAR FRM SIG Blinks red.	Blinks 4 times per second	Blinks 4 times per second	Intermittent tone 4 times per second	An irregular reference signal input to GENLOCK IN prevents normal recording by pausing recording. The recorded clip is divided. • Recording resumes when the signal returns to normal. Recording does not resume if interval, one-shot or loop recording is in progress.	Check the GENLOCK IN signal.
7	Drop in reception quality of wireless receiver transmission	WIRELESS RF Blinks red	Blinks 4 times per second (Recording only)	Blinks 4 times per second	No	Indicates poor reception from the wireless receiver. Recording continues but wireless microphone cannot be received.	Check microphone power supply and receiver reception status.

(Continued on the next page)

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Priority	Warning type	LCD or viewfinder indication	Tally lamp	Warning lamp	Alarm tone*6	Warning description and recording/playback operation	Countermeasures
8	1394 connection error	1394 INITIAL ERROR Blinks red	Blinks 4 times per second	Blinks 4 times per second	No	The DVCPRO/DV cable has become disconnected or multiple devices are connected.	Check the camera and device connections, reconnect them if necessary, then turn the power off and back on again.
9	Battery nearly empty	The last bar in the battery level indication blinks (This indication appears also when MENU indications have been turned OFF.)	Blinks 1 time per second	Blinks 1 time per second	No	The battery is near depletion. Operation continues.*5	Replace the battery as necessary.
10	P2 card nearly fully recorded	The P2CARD level indicator blinks.	Blinks 1 time per second during recording.	Blinks 1 time per second during recording.	No	Less than 2 minutes is left on the P2 cards (level indicator shows 1 minute or less). This warning appears only during recording.	Replace or insert additional P2 cards.

*1 P2 SYSTEM ERROR cause indication
- P2 MICON ERROR: The P2 microprocessor does not respond.
- P2 CONTROL ERROR: A P2 recording control error has occurred.
- CAM MICON ERROR: The camera microprocessor does not respond.

*2 REC WARNING cause indication
- CARD ERROR*: P2CARD error (* indicates the number of the slot of the card with the error.) Stops recording.
- REC RAM OVERFLOW: Overflow of recording RAM. Stops recording.
- PULL DOWN ERROR: 25P (30P, 24P) video pulldown error. Recording continues.
- ERROR: Other recording errors (When an attempt is made to record 1000 or more clips on one P2 card.)

*3 Perform either of the following procedures to cancel this warning.
- Press a playback control button.
- Press the THUMBNAIL button.
- Remove the P2 card and insert another card.

*4 Perform either of the following procedures to cancel this warning.
- Press the REC button.
- Press a playback control button.
- Press the THUMBNAIL button.
- Remove all cards.

*5 When NEAR END CANCEL is set to ON, you can press the DISP/MODE CHK button to cancel the alarm.

*6 When the alarm sounds, audio is not output to the camera speakers or earphones. The DISP/MODE CHK button cancels only the alarm tone when pressed during an alarm.

Warning and Error Display for Thumbnail Operation and USB HOST MODE

Item	Message	Description	Measure
Thumbnails	CANNOT ACCESS!	Data cannot be accessed because it is corrupted or for other reasons.	Restore media and clips to normal state before access.
	CANNOT CHANGE!	Any thumbnails that cannot be produced on the AVC-Intra 100 or AVC-Intra 50 and displayed in gray cannot be changed at the text memo position.	Set SYSTEM MODE according to the clips.
	CANNOT COPY!	Images cannot be copied.	Check the conditions for copying.
	CANNOT DELETE !	P2 card contains contents version mismatches or bad clips.	Match devices and contents versions, and repair bad clips.
	CANNOT FORMAT!	P2 card problem prevents formatting.	Check P2 card.
	CANNOT RECONNECT!	A clip that does not span multiple P2 cards cannot be reconnected.	Check selected content.
	CANNOT REPAIR!	Data cannot be repaired since content that cannot be repaired is selected.	Check selected content.
	CANNOT REPAIR IN SELECTION!	Some of the selected clip could not be repaired.	—
	CARD FULL!	The P2 or SD card is full.	Insert media with sufficient capacity.
	INVALID VALUE!	Entered data was invalid.	Enter data in a valid range.
	LACK OF REC CAPACITY!	There is not enough recording capacity left on the card.	Insert a card with sufficient recording capacity.
	MISSING CLIP!	A shot mark will be added to the clips recorded on multiple P2 cards when all P2 cards are not inserted yet.	Insert all P2 cards with recorded clips, and confirm that the ! incomplete clip indicators disappear, and then add shot marks.
	NO CARD!	No P2 or SD card is inserted.	Insert compatible media.
	NO COPY TO SAME CARD!	A clip cannot be copied to the card storing the original clip.	Copy the selected clip to a card that does not contain the original clip.
	NO FILE!	The designated file is not found.	Check the file.
	NO SD CARD!	No SD card is inserted.	Insert an SD card.
	SAME CLIP IS SELECTED!	The clip cannot be copied because a clip that has already been copied and the original clip have been selected.	Confirm the selected clip and release either the source clip or the destination clip and then execute the copy operation.
	TOO MANY CLIPS!	Too many clips are selected.	Reduce the number of selected clips.
	UNKNOWN CONTENTS FORMAT!	P2 card contains contents version mismatches or corrupted content.	Match devices and contents versions, and repair bad clips.
	UNKNOWN DATA!	The metadata character code is invalid.	Use UTF-8 for the metadata character code. Use the viewer to enter correct characters.
	USER CLIP NAME MODIFIED!	Characters in the clip name had to be deleted in adding the counter value.	The user clip name plus the counter value can only contain up to 100 bytes. Characters in the clip name are automatically deleted when the total exceeds 100bytes.
	WRITE PROTECTED!	The P2 or SD card is write protected.	Insert write-enabled media.
Soft keyboard	CANNOT CHANGE!	[PERSON] will be entered while the text memo is not available.	Enter [TEXT] before entering [PERSON].
	CANNOT SET! INVALID VALUE!	The entered value is incorrect.	Change the value.

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Item	Message	Description	Measure
HDD (USB HOST MODE)	CANNOT ACCESS CARD!	An error occurred during P2 card access.	Check P2 card.
	CANNOT ACCESS TARGET!	An error occurred during hard disk access.	Check hard disk status and connection.
	CANNOT FORMAT!	The hard disk cannot be initialized.	Connect another hard disk drive.
	CANNOT RECOGNIZE HDD!	The destination target cannot be properly recognized.	Reboot the hard disk or connect a different hard disk.
	CARD IS EMPTY! CANNOT COPY!	The P2 selected for copying is empty.	Copying is not performed since the card is empty.
	HDD CAPACITY FULL!	Not enough space left on the hard disk.	There is not enough space on the connected hard disk. Use a new hard disk or formatted hard disk.
	HDD DISCONNECTED!	The unit is not connected to a hard disk.	Reconnect the USB cable. If the hard disk does not operate normally, turn it off and turn it back on again.
	MISMATCH COMPONENT!	Copying cannot be made because the destination card is in the wrong format.	Use a P2 card with the same model number or import video in clip units.
	P2 CARD IS UNFORMATTED!	The P2 card is not formatted.	Use a formatted P2 card.
	PLEASE FORMAT P2 CARD!	This warning indicates that data could not be imported from a hard disk to a P2 card because the P2 card contained recorded data.	You cannot copy to a P2 card that contains data. Format the card on a P2 device and copy again.
	TOO MANY PARTITIONS!	There are too many partitions.	Hard disks can handle up to 23 partitions. Use a new hard disk or formatted hard disk.
	TOO MANY TARGETS!	Multiple devices are connected.	Disconnect devices, turn off the unit and turn it back on again.
	UNKNOWN DEVICE CONNECTED!	The connected DVD drive is not compatible.	Disconnect devices, turn off the unit and turn it back on again.
	VERIFICATION FAILED!	The compare check after copying failed.	Copy the data again.

Updating the firmware incorporated into the unit

The firmware can be updated using either of the following two methods.

1 Checking the current version of firmware and performing the update using the dedicated tool (P2_Status_Logger)

PASS (P2 Asset Support System) is only available to customers who have completed customer registration with Panasonic.

Log in to PASS and use the dedicated tool (P2_Status_Logger) to check the version information of the firmware on the unit and download links to pages containing the necessary firmware. For further information about downloading and using P2_Status_Logger, log in to PASS and refer to the relevant pages. Besides access to PASS, completing customer registration has a number of other benefits. For further details, refer to the PASS (P2 Asset Support System) website (https://eww.pavc.panasonic.co.jp/pro-av/).

2 Checking the current version of the firmware using the unit and performing the update

Check firmware version of the camera in the DIAGNOSTIC screen. Then access the site listed in the NOTE below to check the most recent firmware information and download any firmware you require.

◆ NOTE

- **The update is completed by loading the downloaded file onto the unit via an SD memory card. For further details about the updating methods, refer to the following website.**
  https://eww.pavc.panasonic.co.jp/pro-av/
- **Be sure to use a compatible SD memory card. The unit is compatible with SD memory cards based on the SD and SDHC standards. Also, be sure to format the memory card using the unit before use.**

Chapter 10 Index

1

MENU 1394 AUDIO OUT 137
MENU 1394 CMD SEL 142
MENU 1394 CONFIG 144
1394 connection 152
MENU 1394 CONTROL 142
MENU 1394 STATUS 144

2

MENU 25M REC CH SEL 136

A

MENU A.IRIS LEVEL. 130
MENU ACCESS LED 142
MENU ALARM 142
MENU ASPECT CONV 132
MENU ATW 133
MENU ATW TYPE 133
Audio Input 58
Audio level meter magnification 78
MENU AUDIO SETUP screen 135
Auto Black Balance 52
MENU AUTO KNEE SW 134
MENU AUTO LEVEL CH3 136
MENU AUTO LEVEL CH4 136
Auto tracking white balance 52

B

MENU BATTERY MODE 140
MENU BATTERY SELECT 140
MENU BATTERY SETUP screen 140
battery
Mounting 91
Setting 91
Black Balance 51
BP-GL65/95 NEAR 140

C

MENU CAC 142
MENU CAC CARD READ 142
MENU CAC FILE DELETE 142
MENU CAC FILE INIT 142
MENU CAC PROPERTY 142
MENU CAMERA MODE 132
MENU CARD FUNCTION screen 141
MENU CARD/BATT 139
Center marker 78
MENU CHROMA LEVEL 129
MENU CHROMA PHASE 129
Chromatic Aberration Compensation (CAC) 97
cine-like gamma 37
clip 106
MENU CLOCK SETTING 143
MENU COLOR TEMP Ach 129
MENU COLOR TEMP Bch 129
Connector signal 170
Control of external devices 152
Copying 114
Counter 69
cue up 43

D

Date and Time 26
MENU DATE/TIME 139
DC power 93
Deleting 113
MENU DETAIL CORING 129
MENU DETAIL LEVEL 129
MENU DIAGNOSTIC screen 143
Dimensions 166
MENU DIONIC160 NEAR 140
MENU DIONIC90 NEAR 140
Diopter Adjustment 83
MENU DISPLAY SETUP screen 138
MENU DOWNCON MODE 137
MENU DRS EFFECT 130
DVCPRO/DV Connector 151
Dynamic Range Stretcher 9, 57

E

Electronic Shutter 54
MENU ENDURA10 NEAR 140
MENU ENDURA7 NEAR 140
MENU ENDURA-D NEAR 140
errors 74,157
MENU EVF B.LIGHT 138
MENU EVF COLOR 138
MENU EVF PEAK FREQ 138
MENU EVF PEAK LEVEL 138
MENU EVF SETTING 138
MENU EXT DC IN SEL 140
external DC power 93
external power 93

F

MENU F.MIC LEVEL 137
MENU F.MIC POWER 136
Fast-forward playback 43
Fast-reverse playback 43
FBC 56
firmware 161
Flange Back 95
Flash Band Compensation 56
Focus assist 80
MENU FOCUS BAR 139
Formatting
Hard Disks 148
P2 Card 119
SD memory card 86, 120
MENU FRAME RATE 129
FRONT AUDIO LEVEL Control 59
FRONT AUDIO LEVEL Control Knob 103
Front Microphone 100
MENU FRONT VR CH1 135
MENU FRONT VR CH2 135

G

MENU GAMMA 130
GENLOCK 69
MENU GL PHASE 143

H

MENU H PHASE 143
MENU HEADROOM 137
MENU HIGH GAIN 133
Hot Swap Recording 41
MENU HYTRON140 NEAR 140
MENU HYTRON50 NEAR 140

I

internal battery 156
Internal Clock 26
Interval recording 40
MENU INTERVAL TIME 135
MENU IRIS ADJUST 142

K

MENU KNEE 130

L

LCD 125
MENU LCD BACKLIGHT 139
LCD monitor 81
MENU LCD SETTING 139
MENU LENS SETUP screen 142
Lens
  Adjusting 94
  Mounting 94
MENU LEVEL METER 139
MENU LIMITER CH1 136
MENU LIMITER CH2 136
MENU LOAD/SAVE/INIT 129
Loop recording (LOOP REC) 41
MENU LOW GAIN 133

M

MAIN MENU 127
MENU MARKER 138
MENU MASTER PED 130
MENU MATRIX 130
MENU MENU BACK 139
MENU MENU INIT 143
menu
  menus 125
  THUMBNAIL MENU 107
menus
  Initializing 126
  Using 125
Meta Data 115
MENU MIC LOWCUT CH1 136
MENU MIC LOWCUT CH2 136
MENU MIC LOWCUT CH3 136
MENU MIC LOWCUT CH4 136
Microphone 100
MENU MID GAIN 133
MODE CHECK 77
MENU MODEL NAME 143
MENU MONITOR SELECT 137

N

MENU NAME EDIT 131
Native recording 35
Native VFR Recording 36
MENU NEAR END CANCEL 141
MENU NiCd14 END 140
MENU NiCd14 NEAR 140
Normal Recording 34
Normal speed playback 43
MENU NP-L7 NEAR 140

O

MENU ONE SHOT TIME 134
One-shot recording (ONE SHOT REC) 40
MENU OPERATION 143
MENU OPTION MENU screen 144
MENU OTHER DISPLAY 139
MENU OTHER FUNCTIONS screen 142
MENU OUTPUT SEL screen 137
overcranking effects 38

P

P2 Cards
  Formatting 119
  Inserting 28
  Prevent Accidental Erasure 29
  Recording times 30
  Removing 28
  Status 29
  Status Display 77
  Writing back 149
MENU P2CARD REMAIN 139
MENU PAG L95 NEAR 140
MENU PC MODE 133
MENU PC MODE SELECT 133
playback 43
Playing back 109
MENU PREREC MODE 135
Pre-recording 39
MENU PROPAC14 NEAR 140
Properties 121
PROXY 41, 119
pull-down recording 35

R

MENU R.MIC CH1 LEVEL 137
MENU R.MIC CH2 LEVEL 137
MENU R.MIC POWER 137
Rain Cover 103
MENU REC COUNTER 139
MENU REC FORMAT 131

MENU REC FUNCTION 134
REC REVIEW Function 41
MENU REC SIGNAL 131
Reconnection 114
Recording formats 45
Recording functions 39,45
Recording level 58
MENU RECORDING SETUP screen 134
remote control 105
Restoring 114
MENU RET SW 134

S

Safety zone 78
MENU SAFETY ZONE 139
MENU SCAN REVERSE 132
Scene File 87
MENU SCENE FILE 141
Scene File Data 87
MENU SCENE FILE screen 129
MENU SD CARD FORMAT 141
SD memory cards
Format 21, 86
Formatting, Writing and Reading 86
Handling 86
Insert 86
Remove 86
Status Display 124
MENU SDI EDH 137
MENU SDI METADATA 137
MENU SDI SELECT 137
MENU SELF SHOOT 139
Self-portrait Shooting 82
MENU SERIAL NO. 143
MENU SETUP 132
MENU SHADING (USER) 142
MENU SHADING SELECT 142
Shooting 33
Shot Marker (SHOT MARK) 42
Shoulder Strap 102
Shutter Mode 54
Shutter Speed 54
MENU SKIN TONE DTL 130
Specifications 166
Standard VFR recording 36
MENU START DELAY 135
MENU SW MODE screen 133
MENU SYNC SCAN DISP 139
SYNCHRO SCAN 55
MENU SYNCHRO SCAN 129
MENU SYSTEM MODE 131
SYSTEM SETUP screen 131

T

MENU TC MODE 135
MENU TC OUT 138
MENU TC VIDEO SYNCHRO 138
MENU TEST TONE 136
Text Memo 42
THUMBNAIL 106
Thumbnail
Changing 111
Selecting 109
Switching 110
menu 106
Time Code 65
Time Data 60
Time zone 26
MENU TIME ZONE 143
MENU TRIMPAC14 NEAR 140
Tripod 102
MENU TYPE A END 141
MENU TYPE A FULL 140
MENU TYPE A NEAR 141
MENU TYPE B END 141
MENU TYPE B FULL 141
MENU TYPE B NEAR 141

U

MENU UB MODE 135
undercranking effects 38
Updating 161
USB
device mode 145
host mode 146
User bits 60
USER buttons 57
MENU USER CLIP NAME 117
MENU USER FILE 141
MENU USER MAIN 134
MENU USER1 134
MENU USER2 134

V

MENU V DETAIL FREQ 131
MENU V DETAIL LEVEL 129
Variable Frame Rate (VFR) 36
Variable Speed Playback 43
VERSION 143
VFR 129
MENU VIDEO OUT CHAR 138
MENU VIDEO OUT ZEBRA 138
Viewfinder
Adjusting 83
screen displays 71
Setting up 83
Status Displays 70

W

MENU W.BAL.PRESET 133
Warning System 157
warnings 74
Waveform monitor 82
MENU WFM 134
White Balance 51
White Shading Compensation 96
wireless receiver 100
MENU WIRELESS TYPE 137
MENU WIRELESS WARN 137

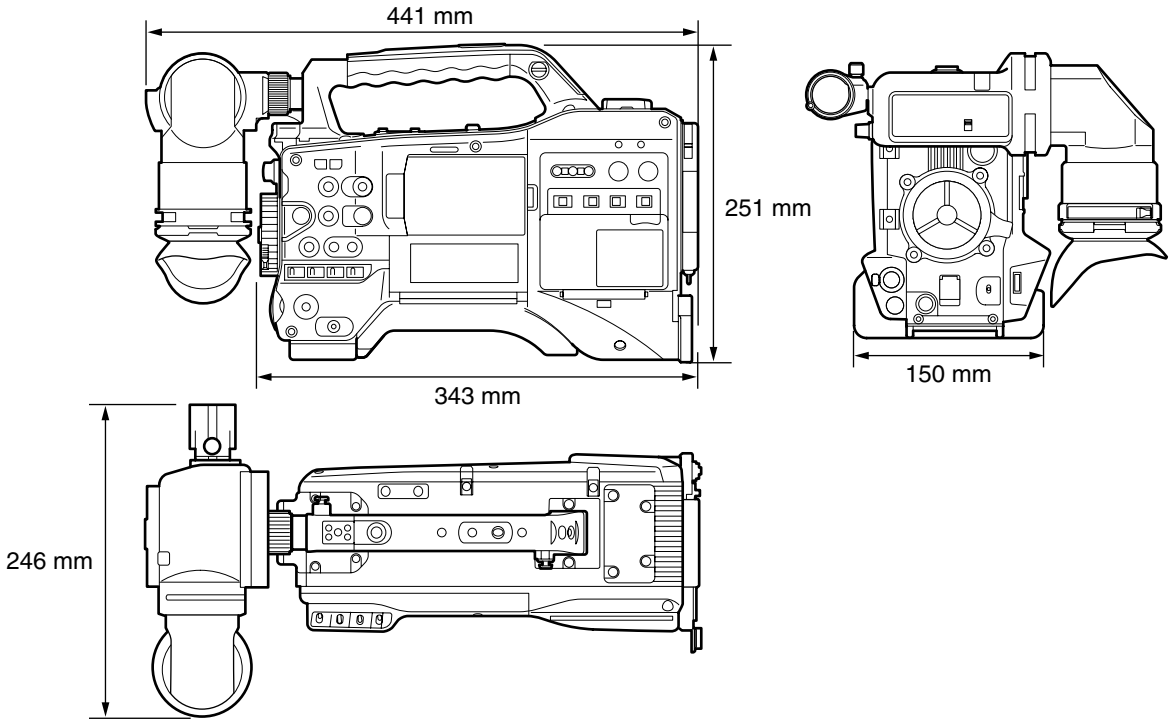
Z

Zebra pattern 79
MENU ZEBRA1 DETECT 138
MENU ZEBRA2 138
MENU ZEBRA2 DETECT 138
MENU ZOOM 139

Chapter 11 Specifications

Dimensions and specifications

Dimensions



Specifications

General

Power supply:	DC12 V (11 V to 17 V)
Power consumption:	18 W (with the supplied lens, 3.2 LCD monitor)

indicates safety information.

Ambient operating temperature/humidity:	0 °C to 40 °C / 10% to 85% (relative humidity)
Storage temperature:	–20 °C to 60 °C
Weight:	Approx. 3.6 kg (camera unit only) Approx 5.0 kg (Including lens and lens hood)
Dimensions: (Camera only) (With supplied lens)	 246 mm (width) × 251 mm (height) × 441 mm (depth) (excluding protrusions) 246 mm (width) × 251 mm (height) × 549 mm (depth) (excluding protrusions)

Camera Unit

Pickup devices:	1/3 inch progressive, 2.2 megapixel, 3MOS sensor
Lens mount:	1/3 inch bayonet type
Color separation optical system:	Prism system
ND filter:	4 positions (CLEAR, 1/4ND, 1/16ND, 1/64ND)
Gain settings:	–3/0/+3/+6/+9/+12/+24 dB
Shutter speed:	• 50i/50p mode: 1/50 (OFF), 1/60, 1/120, 1/250, 1/500, 1/1000, 1/2000 sec. • 25p mode: 1/25 (OFF), 1/50, 1/60, 1/120, 1/250, 1/500, 1/1000, 1/2000 sec. • 60i/60p mode: 1/60 (OFF), 1/100, 1/120, 1/250, 1/500, 1/1000, 1/2000 sec. • 30p mode: 1/30 (OFF), 1/60, 1/100, 1/120, 1/250, 1/500, 1/1000, 1/2000 sec. • 24p mode: 1/24 (OFF), 1/60, 1/100, 1/120, 1/250, 1/500, 1/1000, 1/2000 sec.
Shutter speed (Synchro scan):	• 50i/50p mode: 1/50.0 to 1/250.0 • 25p mode: 1/25.0 to 1/250.0 • 60i/60p mode: 1/60.0 to 1/249.8 • 30p mode: 1/30.0 to 1/249.8 • 24p mode: 1/24.0 to 1/249.8
Shutter speed (slow):	• 50i/50p mode: 1/12.5, 1/25 • 25p mode: 1/6.25, 1/12.5 • 60i/60p mode: 1/15, 1/30 • 30p mode: 1/7.5, 1/15 • 24p mode: 1/6, 1/12
Shutter opening angle:	3 degrees to 359.5 degrees in 0.5-degree increments
Frame rates:	• 720-50P mode: variable 12/15/18/20/21/22/23/24/25/26/27/28/30/32/34/37/42/45/48/50 fps (frames per second) • 720-59.94P mode: variable 12/15/18/20/21/22/24/25/26/27/28/30/32/34/36/40/44/48/54/60 fps (frames per second)
Horizontal resolution:	1000 TV lines or more (center)

Memory card recorder Unit

Recording media:	P2 card
Recording Formats:	AVC-Intra 100/AVC-Intra 50/DVCPRO HD/DVCPRO50/DVCPRO/DV formats switchable
Recording/Playback Time:	AVC-Intra 100/DVCPRO HD: 8 GB × 1 approx. 8 min 16 GB × 1 approx. 16 min 32 GB × 1 approx. 32 min 64 GB × 1 approx. 64 min
	AVC-Intra 50/DVCPRO50: 8 GB × 1 approx. 16 min 16 GB × 1 approx. 32 min 32 GB × 1 approx. 64 min 64 GB × 1 approx. 128 min
	DVCPRO/DV: 8 GB × 1 approx. 32 min 16 GB × 1 approx. 64 min 32 GB × 1 approx. 128 min 64 GB × 1 approx. 256 min
	The times listed above can be continuously recorded as one clip. The number of recording clips will reduce the above figures somewhat.
Recorded video signals:	• 50 Hz mode (1080-50i, 720-50P, 576-50i) 1080/50i, 1080/25p, 1080/25pN, 720/50p, 720/25p, 720/25pN, 576/50i, 576/25p • 59.94 Hz mode (1080-59.94i, 720-59.94P, 480-59.94i) 1080/59.94i, 1080/29.97p, 1080/29.97pN, 1080/23.98p, 1080/23.98pA, 1080/23.98pN, 720/59.94p, 720/29.97p, 720/29.97pN, 720/23.98p, 720/23.98pN, 480/59.94i, 480/29.97p, 480/23.98p, 480/23.98pA

Digital video Unit

Sampling Frequency:	AVC-Intra 100/DVCPRO HD: Y: 74.2500 MHz, P_B/P_R: 37.1250 MHz (50 Hz) Y: 74.1758 MHz, P_B/P_R: 37.0879 MHz (59.94 Hz)
	DVCPRO50: Y: 13.5 MHz, P_B/P_R: 6.75 MHz
	DVCPRO: Y: 13.5 MHz, P_B/P_R: 3.375 MHz
Quantizing:	AVC-Intra 100/AVC-Intra 50: 10 bits
	DVCPRO HD/DVCPRO50/DVCPRO/DV: 8 bits
Video Compression Format:	AVC-Intra 100/AVC-Intra 50: MPEG-4 AVC/H.264 Intra Profile
	DVCPRO HD: DV-Based Compression (SMPTE 370M)
	DVCPRO50/DVCPRO: DV-Based Compression (SMPTE 314M)
	DV: DV Compression (IEC 61834-2)

Digital audio Unit

Audio Recording Signal:	AVC-Intra 100/AVC-Intra 50/DVCPRO HD: 48 kHz/16 bits, 4CH
	DVCPRO50: 48 kHz/16 bits, 4CH
	DVCPRO/DV: 48 kHz/16 bits, 2CH/4CH switchable
Head room:	20 dB/18 dB Menu selectable

Video Input/Output Unit

GEN LOCK IN:	BNC × 1, 1.0 V [P-P], 75 Ω
VIDEO OUT:	BNC × 1, 1.0 V [P-P], 75 Ω
SDI OUT:	• BNC × 2, 0.8 V [P-P], 75 Ω • HD: compliant with SMPTE 292M/296M/299M • SD: compliant with SMPTE 259M-C/272M-A/ITU-R.BT656-4

Audio Input/Output Unit

MIC IN:	• XLR, 3-pin • + 48 V (available) • available menu selections: –40 dBu/–50 dBu/–60 dBu
AUDIO IN:	• XLR × 2, 3-pin (CH1, CH2) • LINE/MIC / + 48 V (selectable) • LINE: 0 dBu • MIC: available menu selections: –50 dBu/–60 dBu
WIRELESS:	25-pin, D-SUB, –40 dBu
AUDIO OUT:	Pin jack × 2 (CH 1, CH 2), Output: 316 mV, 600 Ω
Earphone:	ø3.5 mm stereo mini jack × 1
Internal speaker:	28 mm diameter × 1

Other Input/Output Unit

TC IN:	BNC × 1, 0.5 V [P-P] to 8 V [P-P], 10 kΩ
TC OUT:	BNC × 1, low impedance, 2.0 V ± 0.5 V [P-P]
IEEE1394:	6 pins, digital input/output (compliant with IEEE1394)
DC IN:	XLR × 1, 4 pins, DC 12 V (11.0 V to 17.0 V)
DC OUT:	4 pins, DC 12 V (11.0 V to 17.0 V), Maximum rated current: 1.5 A
REMOTE:	10 pins
LENS:	12 pins
USB2.0 (DEVICE):	Type-B, 4 pin USB (compliant with USB ver. 2.0)
USB2.0 (HOST):	Type-A, 4 pin USB (compliant with USB ver. 2.0)

LCD Monitor Unit

LCD monitor:	3.2 inch color LCD monitor with approx. 921,000 dots (16:9)

Viewfinder Unit

LCD monitor:	0.45 inch color LCD monitor with approx. 1,226,000 dots (16:9)

P2HD 5 Year Warranty Repair Program*1

Thank you for purchasing this Panasonic P2HD device.
Register as a user for this device to receive a special service warranty up to five years of free warranty repairs.

Customers who register as users on the website will receive an extended warranty repair valid for up to five years.



	1st year	2nd year	3rd year	4th year	5th year*5
P2HD device*2	Basic warranty*3	Extended warranty repair*4			

*1: Please note that this extended warranty is not available in some countries/regions. *2: Not all models eligible for extended warranty coverage. *3: The basic warranty period may vary depending on the country/region. *4: Not all repair work is covered by this extended warranty. *5: The maximum warranty period may be adjusted depending on the number of hours the device has been used.



Purchase P2 product → Register online within 1 month → "Registration Notice" e-mail sent → Free 5 years of Warranty Repairs

Make sure to save the "Registration Notice" e-mail during the warranty period.

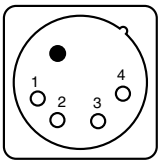
Details about user registration and the extended warranty: http://panasonic.biz/sav/pass_e

Please note, this is a site that is not maintained by Panasonic Canada Inc. The Panasonic Canada Inc. privacy policy does not apply and is not applicable in relation to any information submitted. This link is provided to you for convenience.

Connector signal description

DC IN	
1	GND
2	NC
3	NC
4	+12 V

Panasonic Part No. K1AA104H0038
Manufacturer Part No. HA16RX-4P (SW1) (76)
(Hirose Electric Co.)

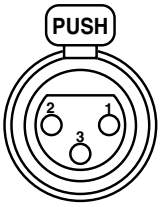


◆ **NOTE**

Be sure to use correct polarity when using external power supplies.

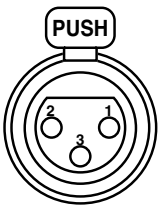
FRONT MIC IN	
1	GND
2	AUDIO IN (H)
3	AUDIO IN (C)

Panasonic Part No. K1AY103A0001
Manufacturer Part No. HA16PRM-35G (72)
(Hirose Electric Co.)



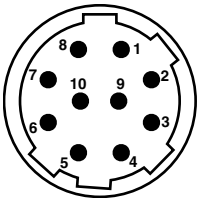
AUDIO IN	
1	GND
2	AUDIO IN (H)
3	AUDIO IN (C)

Panasonic Part No. K1AY103A0001
Manufacturer Part No. HA16PRM-3SG (72)
(Hirose Electric Co.)



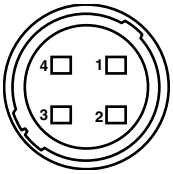
REMOTE	
1	CAM DATA (H)
2	CAM DATA (C)
3	CAM CONT (H)
4	CAM CONT (C)
5	R/C ON
6	R/C VIDEO OUT
7	R/C VIDEO GND
8	NC
9	UNREG +12 V (Max 0.6 A)
10	GND

Panasonic Part No. K1AY110JA001
Manufacturer Part No. HR10A-10R-10SC (71)
(Hirose Electric Co.)



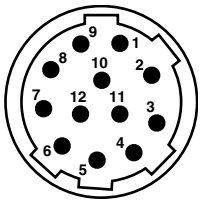
DC OUT	
1	GND
2	R TALLY (open connector)
3	REC START SW
4	UNREG +12 V (Max 1.5 A)

Panasonic Part No. K1AY104J0001
Manufacturer Part No. HR10A-7R-4SC (73)
(Hirose Electric Co.)



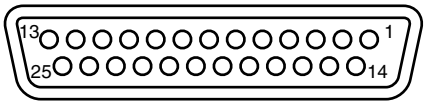
LENS	
1	RET-SW
2	REC
3	GND
4	IRIS-AUTO
5	IRIS-CONT
6	UNREG +12 V (Max 0.4 A)
7	IRIS-POSI
8	IRIS-G-MAX
9	EXT-POSI
10	ZOOM-POSI
11	FOCUS-POSI
12	SPARE

Panasonic Parts No. K1AY112JA001
Manufacturer Part No. HR10A-10R-12SC (71)
(Hirose Electric Co.)



Wireless receiver interface		
1	CH-1 SHIELD	GND
2	CH-1 HOT	Audio input from a wireless receiver: CH1 HOT
3	CH-1 COLD	Audio input from a wireless receiver: CH1 COLD
4	GND	GND
5	UNREG +12 V	Power supply for a wireless receiver
6	RX ON	Remote power output to a wireless receiver.
7	RF WARN	RF warning input from a wireless receiver
8	RM5	Not used
9	RM4	Not used
10	SPARE 1	Not used
11	SPARE 2	Not used
12	EXT CLK	Not used
13	CLK SHIELD	Not used
14	CH-2 SHIELD	GND
15	CH-2 HOT	Audio input from a wireless receiver: CH2 HOT
16	CH-2 COLD	Audio input from a wireless receiver: CH2 COLD
17	+5.6 V	Power supply for a wireless receiver
18	VIDEO OUT	Not used
19	VIDEO RET	Not used
20	VIDEO EN	Not used
21	RM1 (RM CLK)	Not used
22	RM2 (RM DATA)	Not used
23	RM3 (RM WR)	Not used
24	RM +5 V	Not used
25	RM GND	Not used

Panasonic Parts No. K1GB25A00010
Manufacturer Parts No. HDBB-25S (05)
(Hirose Electric Co.)



Information for Users on Collection and Disposal of Old Equipment and used Batteries



These symbols on the products, packaging, and/or accompanying documents mean that used electrical and electronic products and batteries should not be mixed with general household waste.
For proper treatment, recovery and recycling of old products and used batteries, please take them to applicable collection points, in accordance with your national legislation and the Directives 2002/96/EC and 2006/66/EC.

By disposing of these products and batteries correctly, you will help to save valuable resources and prevent any potential negative effects on human health and the environment which could otherwise arise from inappropriate waste handling.



For more information about collection and recycling of old products and batteries, please contact your local municipality, your waste disposal service or the point of sale where you purchased the items.

Penalties may be applicable for incorrect disposal of this waste, in accordance with national legislation.



For business users in the European Union
If you wish to discard electrical and electronic equipment, please contact your dealer or supplier for further information.

Information on Disposal in other Countries outside the European Union
These symbols are only valid in the European Union. If you wish to discard these items, please contact your local authorities or dealer and ask for the correct method of disposal.

Note for the battery symbol (bottom two symbol examples):
This symbol might be used in combination with a chemical symbol. In this case it complies with the requirement set by the Directive for the chemical involved.

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